

Flight, March 30, 1912.

FLIGHT

First Aero Weekly in the World.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

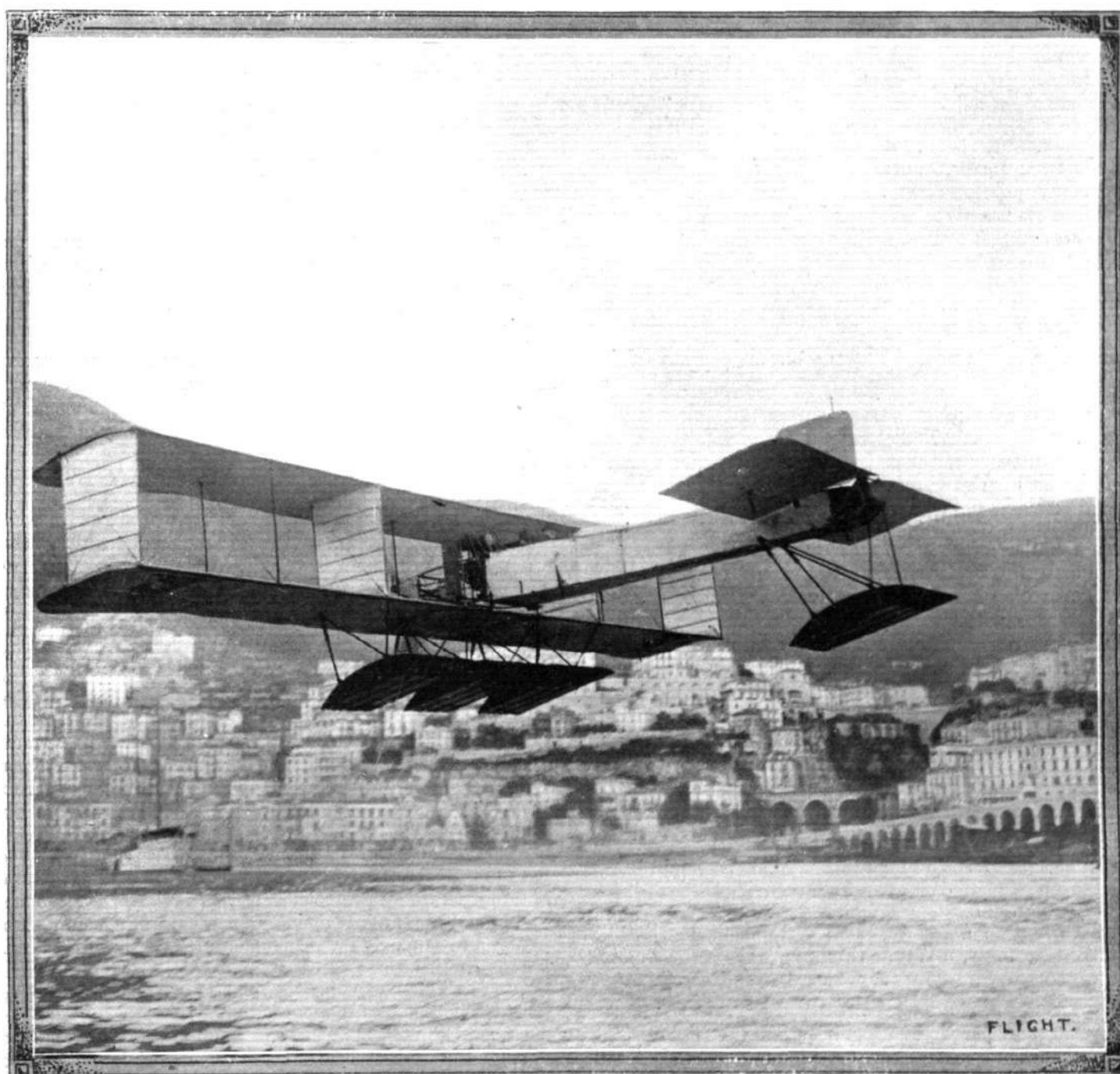
OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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THE HYDRO-AEROPLANES AT MONACO.—The Voisin Canard well up in a flight over the course.

EDITORIAL COMMENT.

Military Progress in France.

If the responsible officials of the British War Office would for a change take their holidays in France, and combine business with pleasure by taking advantage of the facilities which we are quite certain would be afforded them to watch the progress of the French army in aviation, their eyes would doubtless be opened to a considerable extent. It is difficult nowadays to pick up a French newspaper without the eye falling at once on the record of some new performance, some fresh achievement in the air standing to the credit of a soldier aviator. Possibly there might not be a very great deal in, for instance, a new long-distance passenger record, for we know that such things are now simply a matter of the endurance of the individual—the machine can do all that is necessary if the man can hold out. The same may be said of altitude records—in fact, of everything which we call a record. Therefore, if the happenings of the day were restricted to the putting up of fresh figures in what we may call the window-dressing side of aviation, we might be content to let it pass for the time, but it is not these matters at all which give us, as our friends on the other side of the Channel have it, furiously to think. It is rather the all-round progress that is being made, and the close, patient study of the many problems which arise from day to day which impress us. We have expressed ourselves as fairly well satisfied that our own Government has awakened to the immediate necessities of the aerial arm and we are not precisely dissatisfied with the amount of money which has been voted for that service as a preliminary, we trust, to much heavier expenditure in the near future. That is very well up to date, but it is of the time to come of which we must think. What are we doing, or going to do, outside of the purchase of a few aeroplanes to bring our aerial corps into line with the knowledge and skill of those of the Continent? Before us we have two reports relating to aeroplane transport in the French Army. The one details the doings of an aviation section, consisting of three officers and twenty-five non-commissioned officers and men, who have been route marching over half of France. This section, which is apparently intended to be attached to an artillery brigade for observation purposes, consists of three motor-hauled wagons, each carrying a Blériot monoplane with the wings detached. At every halting place the machines are assembled, and in some cases flights made, which finished, the aeroplanes are dismantled, packed away for transport, and the column moves off for its next objective.

Then, again, the Army has been experimenting with certain R.E.P. machines of the same dismountable type, and we read that a few days ago one of them was unpacked and made ready for flight in a trifle over twenty-three minutes. It was then flown by Mr. Gordon Bell, after which it was dismounted and replaced in its wagon in exactly fourteen minutes. There is no doubt but that the French aerial corps is rapidly arriving at the distinction of being the most efficient arm of the service—and we have sixteen machines, there or thereabouts, capable of flying! Truly, it is time that we made a serious move!

Mr. Grahame-White and the Authorities.

Following on all this, we have Mr. Grahame-White resigning from the Technical Reserve Advisory Committee, in order that he may have his hands free to expose the

true condition of military aviation in England.† In an interview published in the *Evening News*, he says that, since the Committee was formed, it has held but two meetings, and has not even been consulted on any point connected with the estimates lately issued by the War Office. "Aviation," says Mr. Grahame-White, "in England is in a state of stagnation. Our people do not realise how backward we are in comparison with other countries, and how our very existence will depend upon our having a modern aerial fleet. No one, for instance, understands that, even now, France could send over a couple of hundred aeroplanes and burn London with comparative ease"—which is almost precisely what we have been saying in *FLIGHT* for months past. The British public simply does *not* realise how serious the position is already, and that it becomes increasingly so every day.

Again quoting Mr. Grahame-White, he says that the Government view seems to be that there is no need to bother now; when required, we can soon build a couple of hundred aeroplanes to catch up any of our rivals. . . . It takes at least two years' hard training to turn out a competent pilot who would be of real use under war conditions; while, as a matter of fact, the Government would not be able to procure the machines. Unless something is done at once, there will very soon be no aeroplane constructors, as they are all being driven out of the business by the inaction of the Government. This, coming from an authority of Mr. Grahame-White's standing, ought to assist in producing the desired effect upon the public mind; and the sooner the true position begins to dawn upon the popular understanding the better it will be for the safety of the Empire.

The Royal Aero Club.

The proceedings at the annual general meeting of the Royal Aero Club were very largely formal in their character, but there was nevertheless a good deal of interesting business transacted, while the record of progress outlined in the chairman's speech was distinctly encouraging. For example, he was able to remind his audience that between December 31st, 1911, and the corresponding date of last year, no less than 130 British aviators qualified for pilots' certificates, while up to date over 200 are inscribed on the books of the Club.

Then, apart from the record of progress achieved, the Club has the future in its keeping, and it became the duty of the meeting to formally assent to certain rules for the better governance of aviation on the sporting and test side of the science, while it was also announced that regulations corresponding to the rule of the road at sea have been drawn up by the Club committee, and which appeared in last week's issue of *FLIGHT*. Finally, the general meeting disclosed the fact that, apart from its other functions, the Royal Aero Club is carrying out the duties of a real society of encouragement, by giving tangible marks of its appreciation of services rendered to the movement by the awarding of medals of honour to those who have achieved remarkable performances during the year. It may be remarked in this connection that a melancholy interest attaches to the awards of this year, in that the Club presented to the relatives of the late Cecil Grace the medal which he would have received had the issue of his cross-Channel flight been a happier one. All in all, the Club is certainly to be congratulated upon the work it has done, and is still doing, on behalf of the science of Flight.

THE NEW AVRO BIPLANE.

EXCEPTING that the general disposition of its respective parts is the same, the new Avro biplane can hardly be recognised as a

A point worth mentioning in connection with the body is that its top surface is flat, and when the machine is in level flight is,

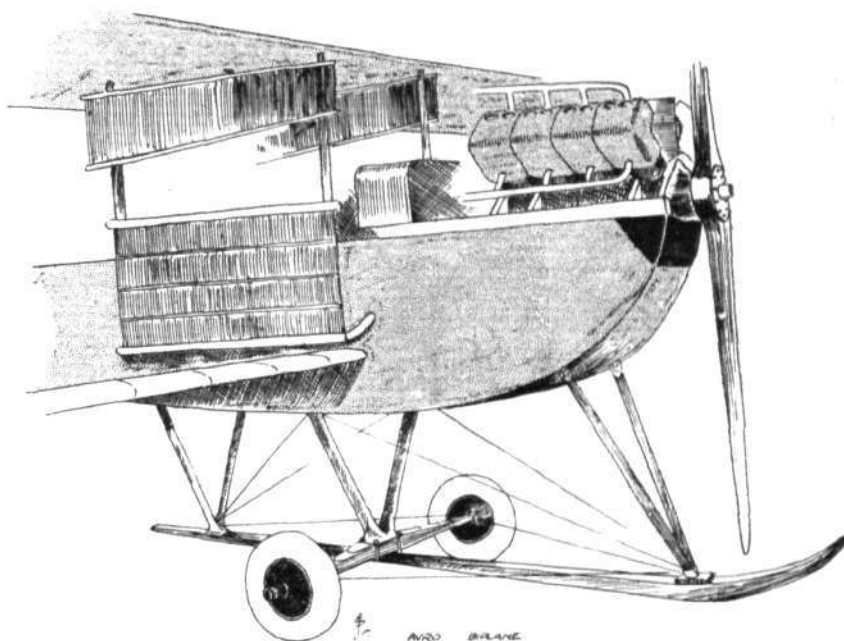


THE NEW AVRO BIPLANE.—View from the front.

modification of the little machine on which Pixton attained his early successes and demonstrated the practicability of carrying a passenger cross-country with an engine of as low horse-power as 35.

Although it is in effect an original model to most of those who keenly follow the trend of design in this country, it is, in reality, several months old, for it was an almost identical machine that the Avro firm supplied to Mr. J. Duigan in September last. The only points of difference in the two machines are that, this present machine being a two-seater, a more powerful motor is installed, and dimensions are slightly increased throughout.

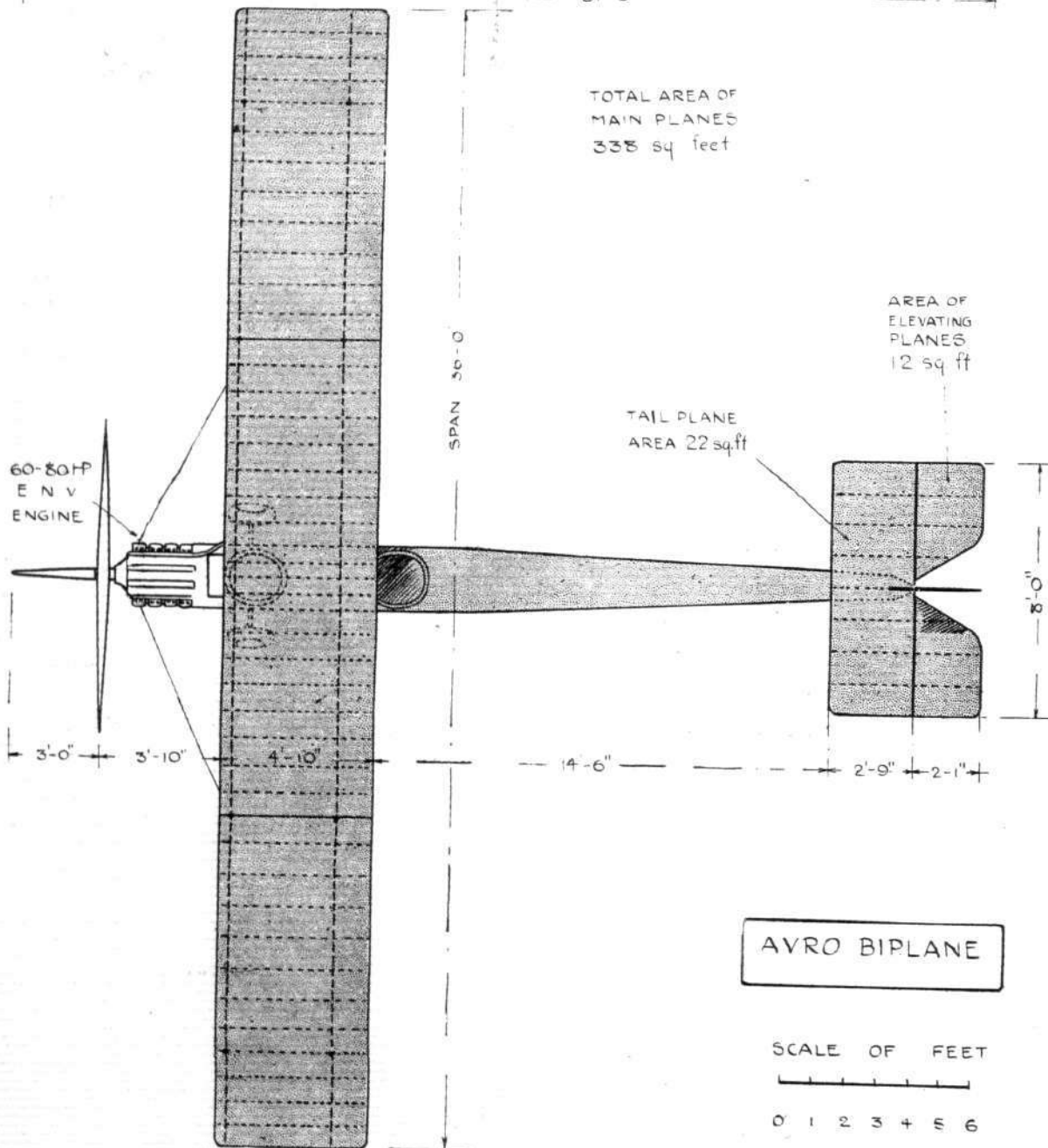
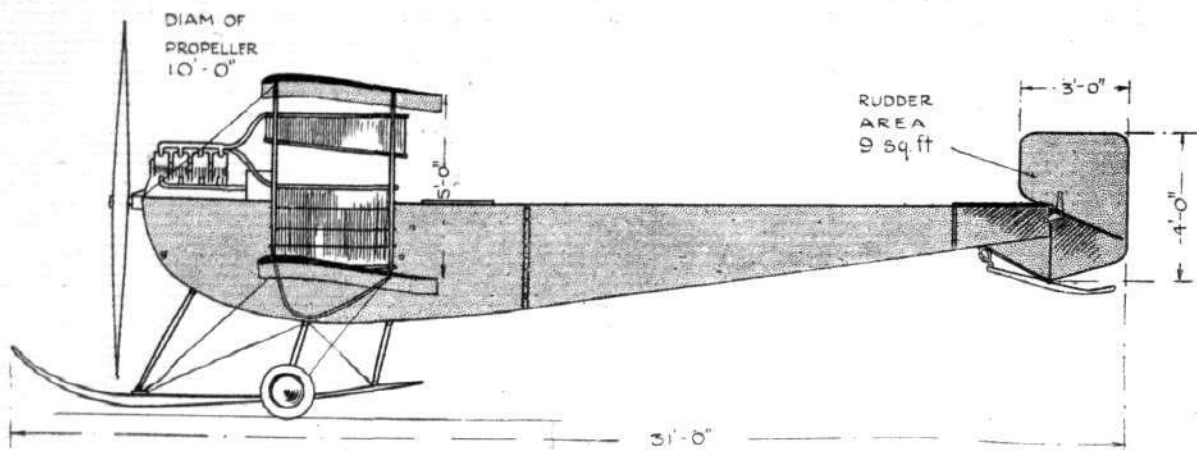
The triangular section body of the early machine has been superseded by one of rectangular section, built to an approximate streamline form, and so deep in the region of the cockpit that much head resistance and much personal discomfort of the pilot and passenger are avoided by virtue of the fact that only their heads emerge from its depths through the well-padded openings on top. Other advantages does this deep form of *fuselage* possess. The lower plane may be attached to it in a manner very similar to the attachment of monoplane wings; the chassis struts may be considerably shortened, thus making for more robustness in the landing gear. To facilitate transport the body may be dismantled into two sections. The crossbracing of the *fuselage*—it is of the ordinary girder type—is the same standard Avro system that has already been explained and illustrated in these columns.



The front section of the new Avro biplane.



THE NEW AVRO BIPLANE.—Three-quarter view from the front.



THE NEW AVRO BIPLANE.—Plan and elevation to scale.

theoretically, horizontal. To preserve its lines it is covered in by metal sheeting in the front, and by fabric to the rear.

The undercarriage needs little description, for it must be admitted that except for the central skid, and the front pair of struts fashioned from wood, and the steel disc wheels employed, it is identical with the Nieuport chassis. Rubber cushions are introduced between the struts and the central skid to further assist in deadening landing shocks.

When the machine first appeared at Brooklands there were some doubts as to whether this type of chassis would "stand up to its work" fitted to a passenger-carrying biplane. However, as far as the tests have gone it has proved eminently satisfactory. So doubts may, for the time being, be dispelled.

The main planes are rectangular, and have an aspect ratio of over $7\frac{1}{2}$, a feature which, coupled with the modified form of Phillips' cross-section employed, must have a most beneficial effect on their efficiency. In their bracing only eight struts are employed, these being fitted and riveted into welded steel sockets. Warping is employed for the maintenance of lateral balance.

In cross-section the planes have little curvature on the under surface, and have the peculiarity that the underside of the trailing-edge is horizontal in flight. Provisions have been made so that in quite a short space of time the machine may be turned into a monoplane. Virtually a double-purpose machine, it will be able to serve either as a weight carrier or a speedy scout. And speed it does exhibit—it must average at least 60 m.p.h.

Steel tubing is solely employed in the construction of the skeleton of the tail. This organ is purely directional, while elevation and depression is regulated by a pair of hinged flaps, operated through levers made from sheet steel.

Control is maintained by universal levers by either pilot or his passenger, the latter of whom is seated well forward in the body at



The Ae.C.F. Grand Prix.

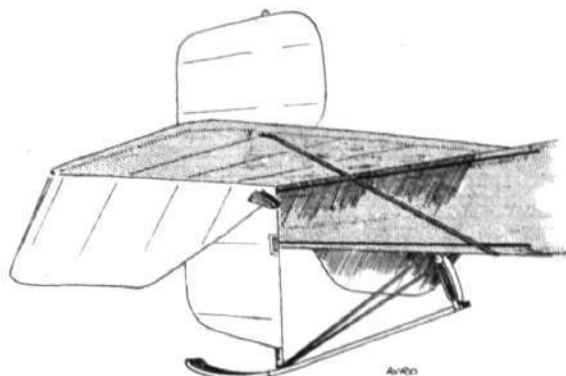
THE first competition in which the cylinder capacity of the engines is limited will be the Grand Prix race of the Aero Club of France, which is to be held over a cross-country circuit in the Anjou district. The race will be open only to French-built machines presented by French firms, and the cylinder capacity is limited to 12 metres. A bonus of $\frac{1}{4}$ th reduction on time will be allowed for each passenger up to a maximum of three, the passengers to

the centre of gravity, so that his extra weight need not interfere with the balance of the machine.

Two little celluloid windows have been let into the floor boards in order that both will be able to see what is directly beneath them.

A 60-80 h.p. E.N.V. motor direct coupled to a 10-ft. Avro propeller provides the forward thrust.

Altogether the new Avro biplane is a decided advance on anything



Sketch of the Avro biplane tail.

their works have hitherto produced. As for its efficiency it is only necessary to mention that on test on Saturday last it attained an altitude of 1,000 feet, in a little over five minutes. 2,000 feet was reached, with a heavy passenger aboard, in 13 minutes.



weigh at least 75 kilograms. Ten entries are named as the minimum to ensure the events being held, while 35 entries have been fixed as the maximum. On each of the two days four rounds of the 150-kilom. course will have to be covered, with compulsory stops each time at Angers and optional stops at Samur and Cholet. The entry fee has been fixed at 2,000 francs, of which 500 francs will be returned to those who start and 1,000 francs to those who finish the course.



THE HYDRO-AEROPLANES AT MONACO.—The Henry Farman biplane, piloted by Fischer, at the starting line. This machine, carrying two on board, secured the leading position in the first day's competition.

MONOPLANE FAILURES.

M. BLÉRIOT'S DISCOVERIES AND REPORT TO THE FRENCH GOVERNMENT, WHICH HAS CAUSED THE FRENCH WAR MINISTER TEMPORARILY TO SUSPEND THE USE OF MONOPLANES BY ARMY OFFICERS.

BELOW we give a translation of the text of what is perhaps one of the most important documents dealing with the technical side of aviation that has yet been prepared. It is the communication of M. Blériot to the French Government, which resulted in the issue by the French War Minister of that startling order to suspend the use of monoplanes in the French Army, which was only made known in the daily Press this week. That it should have been written by the pioneer designer of monoplanes and should form such a frank and lucid *exposé* of a hitherto unsuspected weakness in such machines, is the finest possible vindication of the Etablissement Blériot as a scientific concern. It would be difficult indeed to over-estimate the importance of M. Blériot's conclusions, and no reader of his argument but will extend the greater appreciation to the author in that he of all those who have tackled the problem should have been the first to present what would seem to be the true solution.

True or not, however, the fact remains that the French Army are having all their monoplanes re-trussed above the wings to resist the top loading that M. Blériot describes in his report, and it follows as a natural consequence that no designer can henceforth regard it as proper to suppose that the upper guys have only to support the dead weight of the wings. Likewise it follows that all monoplane users will proceed forthwith to have their wings re-trussed accordingly.

M. Blériot's Report.

The death of Lieut. Sevelle was not, as have been so many preceding calamities, useless to the cause of aviation. It has brought to light a new conception of the forces to which aeroplanes are subjected in flight. It has come to explain the series of mysterious accidents that have overtaken Chavez, Blanchard, Lantheaume and Ducourneau.

Up to the present no one has admitted that the wings of monoplanes can carry top-loading (*puissant travailler de haut en bas*). After Chavez's death, witnesses affirmed to having seen the wings fold down beneath the machine. No one heeded their words, regarding them as the outcome of an optical illusion; meanwhile the wings (of monoplanes) were strengthened once more. Then came Blanchard's death, followed by a second reinforcement of the wing-spars. Following upon that came the death of Lantheaume, which caused a military commission to decide that the wing spars should be strengthened yet a third time, and it was with these newly reinforced wings that Lieut. Sevelle met his death.

Alas, it was not the weakness of the wings that caused these accidents. These four deaths occurred under similar circumstances; the machines had remained for a long time in the air amid most violent *venous*. Chavez had crossed the Alps. Blanchard had journeyed from Orleans to Paris. Lantheaume had just finished a flight of 50 kilometres, and Sevelle a flight of 2 hours 10 minutes duration. Their machines had resisted perfectly the buffeting of the wind, when suddenly, as they (the pilots) proceeded to descend by *vol piqué*, the wings, which carry very little positive loading at this time (*travailler très peu de bas en haut*), broke and doubled up.

I do not speak of Lieut. Ducourneau's accident, for that constitutes the first occasion on which the upper guys (*haubans supérieures*) were broken, and is probably due to an analogous cause.

In Lieut. Sevelle's machine the four upper guys were completely cut through.

All the accidents having resulted in the same conditions led to the idea that the wings must be forced from above, and had to resist pressure acting vertically in a downward direction.

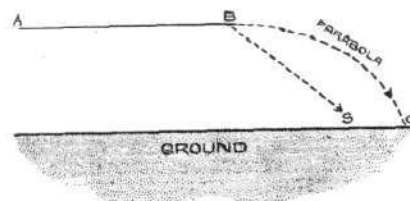
Then it was that I realised how the momentum of an aeroplane flying in a straight line, and made suddenly to descend by a *vol piqué*, would reverse the loading on the wing (*faire travailler l'aile à l'envers*), and now this phenomenon cannot be doubted by any who care to analyse the problem.

A machine moving horizontally will, when the motive power is diminished, descend by a parabolic path, which will be longer in proportion to the initial speed. If, by a strong movement of the elevator, the pilot transforms the trajectory into a straight line slanting at a steeper angle towards the earth than the parabola, the machine is immediately subjected to a force from above (*pris par dessus*). In order that it (the machine) should make this descent to earth, which takes place more rapidly than that resulting from the gravitational influence of its own weight, a downward force must act upon the wings.

The diagram herewith shows that, if the pilot is moving horizontally in the direction AB, and at the point B throttles his engine without touching his elevator, he will follow a natural parabolic trajectory, BC.

If, on the contrary, at the point B he suddenly uses his elevator in order to descend in the direction BS, of which the slope is greater than its small angle of incidence (*dont l'inclinaison est plus grande que son petit angle d'attaque*), it is evident that, in order to overcome the momentum of his machine, he must apply a force on the top of the wings, and at the same time of course this will stress the upper guys.

It is then the change from the direction AB to the direction BS that causes the danger to the pilot and not the *vol piqué* itself,



which if performed slowly and progressively presents no objections.

There is no longer room for doubt that the deaths of Chavez, Blanchard, and Lantheaume were caused, not, as has been believed up to the present, by the breaking of the wings, that have withstood their trials and tests of *positive* loading successfully, but by the failure of the upper-guys, which have no strength to resist these forces coming from above.

It is therefore necessary to test monoplanes with a top loading on the wings, so as to obtain a system of upper bracing that will be of corresponding strength to the lower bracing now in use.

It is to be regretted that four deaths should have been required to pave the way to this solution, which must completely modify the design of aeroplanes.

What shall be the new factor of safety for these new forces? We estimate that, theoretically, the resistance of the upper guys may be less than the under guys.

In practice, allowing for the rare occasions on which the upper guys are stressed, we can allow, for a factor of safety of five with the lower guys, a factor of safety of three for the upper system.

This relationship of momentum and live-load on the machine also causes the factors of safety to change according to the speed of flight.

In effect, the momentum is proportional to the square of the speed; consequently, if we allow a factor of safety of 5 for a machine incapable of exceeding a speed of 100 k.p.h., it is necessary to give a f.s. four times as great, viz., 20, for the guys of a machine flying at 200 k.p.h. This explains how it is that accidents have not happened to machines that have much smaller factors of safety, but do not exceed 60 k.p.h.

In the matter of momentum, it would seem that a machine capable of 60 kiloms. per hour and having a factor of safety of 3.6 will be as strong as a machine flying at 100 k.p.h. with a f.s. of 10.

Again, it is necessary to enquire if the pilot's own body can resist the sudden shocks that are the immediate outcome of those factors, and I feel certain that a man seated cannot resist a shock directed from beneath upwards of a magnitude greater than twice his own weight without being immediately upset; and it is probable that he cannot resist a vertical upward force exceeding that which will stress the wings of his machine to a factor of 5 or 6, without serious inconvenience to his internal organs.

It is, then, necessary not to fall into the error or exaggeration in respect to these factors. Their proportion must be subordinate to the physical resistance of the pilots, who withstand, by shock on their bodies, the momentum effect, which is proportional to the altitude. (This is only meant to apply to rigid machines like those in actual use.)

These new conceptions must sensibly modify the conditions of the acceptance of flying machines and will tend considerably towards safety.

(Signed) L. BLÉRIOT.

These last two paragraphs being somewhat vague in their meaning, we give below the original French:

"Il y a donc lieu de ne pas tomber dans l'exageration des co-efficients. Leur taux doit être subordonné à la résistance des pilotes qui subissent par répercussion, dans tout leur corps, des efforts d'inertie qui sont proportionnels à leur élévation. (Ceci n'est vrai bien entendu que pour les appareils rigides comme les appareils actuels.)

"Toutes ces nouvelles conceptions doivent donc modifier sensiblement les conditions de réception des appareils d'aviation et vont faire un pas considérable vers la sécurité."

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

As the result of the ballot, the following is the Executive Committee of the Royal Aero Club for the ensuing year:—

Sir Charles D. Rose, Bart., M.P. (<i>Chairman</i>).	J. T. C. Moore-Brabazon.
Griffith Brewer.	Alec Ogilvie.
Col. J. E. Capper, C.B., R.E.	Mervyn O'Gorman.
G. B. Cockburn.	C. F. Pollock.
Capt. Bertram Dickson, R.F.A.	Commander C. R. Samson, R.N.
John Dunville.	A. Mortimer Singer.
Capt. J. D. B. Fulton, R.F.A.	The Marquess of Tullibardine,
Col. H. C. L. Holden, C.B., R.A., F.R.S.	M.V.O., D.S.O., M.P.
Prof. A. K. Huntington.	Roger W. Wallace, K.C.
K. A. McClean.	

Committee Meeting.

A meeting of the Committee was held on Tuesday, the 26th inst., when there were present:—Sir Charles D. Rose, Bart., M.P., in the Chair, Mr. Griffith Brewer, Mr. G. B. Cockburn, Capt. Bertram Dickson, Capt. J. D. B. Fulton, R.F.A., Col. H. C. L. Holden, C.B., R.A., F.R.S., Prof. A. K. Huntington, Mr. Alec Ogilvie, Mr. C. F. Pollock, Mr. R. W. Wallace, K.C., and Harold E. Perrin, Secretary.

Apologies for absence were received from the Marquess of Tullibardine and Commander C. R. Samson, R.N.

Election of Chairman.—Mr. Roger W. Wallace, K.C., in proposing Sir Charles Rose, Bart., M.P., as Chairman of the Club, said he was sure that his proposal would meet with the unanimous approval of all members of the Committee, and that the traditions of the Club would be in excellent hands. He and all the members of the Committee would give him their cordial support. Mr. Griffith Brewer seconded the motion, which was unanimously carried.

Sir Charles Rose, in accepting the invitation, paid a high tribute to the devoted labours of the retiring Chairman, and expressed the hope that the Club would long enjoy the benefit of Mr. Wallace's counsels and assistance.

Vote of Thanks to Retiring Chairman.—The following resolution was proposed by Prof. A. K. Huntington:—

"The Committee of the Royal Aero Club desires to place on record its high appreciation of the very valuable services rendered to the Club and to the aeronautical movement by Mr. Roger W. Wallace, K.C., in his capacity as Chairman of the Club from 1901 to the present date, during which period enormous strides have been made in the development of the various branches of aeronautics, making the work of the Club extremely arduous. The Committee feels that it is owing to the zeal displayed by its Chairman that the work of the Club has proved so efficient. The Committee desires further to testify to the successful manner in which the prestige of the Club has been upheld and strengthened on all occasions, both at home and abroad, by the labours of Mr. Wallace."

Prof. Huntington stated that it was the intention of the Committee to elect Mr. Roger W. Wallace a Vice-President of the Club, and to ask him to continue to represent the Club in its foreign relations. The Resolution was seconded by Mr. C. F. Pollock, and carried unanimously.

Election of Members.—The following new members were elected:—Capt. E. F. B. Charlton, R.N., A.D.C., and Staff-Surgeon Hardy Vesey Wells, R.N.

Aviators' Certificates.—The following Aviators' Certificates were granted:—

199. William Ewart Hart (Bristol Biplane, Penrith, New South Wales).
200. Capt. Francis John Brodigan (Bristol Biplane, Salisbury).

Competition Rules.

The Competition Rules of the Royal Aero Club are now being issued to all aviators on the Competitors' Register. Particular attention is drawn to the following Rules:—

29. Registration of Competitors.—No competitor shall be eligible to enter an aircraft for, or drive an aircraft in, any competition unless the name of such competitor is duly entered upon the Competitors' Register of The Club, which Register shall be open for inspection at the Offices of The Club at all reasonable times. The Club may refuse to enter the name of any person on the Competitors' Register without assigning any reason. The competitor shall be given a certificate of his entry in the Register, which he shall produce on the demand of an Official at any Meeting.

30. The fee for registration of a competitor shall be 10s., except in the case of a member of The Club, where there shall be no fee, or in the case of a member of a club directly affiliated to The Club, when the fee shall be 5s.

31. Each entry in the Register shall be given a Register Number, and shall hold good only until the 31st day of December next ensuing.

Certified aviators who are members of The Club have been entered on the Competitors' Register, and they will receive a Register Number in a few days. Certified aviators who are not members of The Club are requested to make application for registration should they wish to take part in competitions.

Annual General Meeting.

The 11th Annual General Meeting of the Royal Aero Club was held at 166, Piccadilly, London, W., on Thursday, March 21st, 1912, at 4 p.m., when a large number of members were present.

Mr. Roger W. Wallace, K.C., Chairman of the Club, briefly reviewed the advances made in aviation by Great Britain during the past year. He spoke feelingly of the losses this country had sustained by the deaths of Messrs. Bernard G. Benson, Gerald Napier, Lieut. R. A. Cammell, Hubert Oxley and D. Graham Gilmour. The prize-list for the contests held in Great Britain during the past year had represented a sum of £16,300; in that connection, he proposed a hearty vote of thanks to the following donors of prizes:—Lord Northcliffe (*Daily Mail*), Mr. James Gordon Bennett, Mr. E. Manville, the Michelin Tyre Co., Mr. A. Mortimer Singer, Mr. John Dunville, the Hon. Mrs. Assheton Harbord, Mr. P. V. Alexander, the proprietors of the *Standard*, the proprietors of the Brighton-Shorcham Aerodrome, and the Brooklands Automobile Racing Club.

The vote of thanks was passed unanimously.

Amongst the notable performances that had been accomplished during the year, flights by the following aviators were specially mentioned by the Chairman:—

- | | |
|--|--|
| Pierre Prier, First London-Paris Flight. | |
| James Valentine, in the European Circuit. | |
| Gustav W. Hamel, | } in the Gordon-Bennett Aviation Race. |
| Alec Ogilvie, | |
| S. F. Cody, | } in the <i>Daily Mail</i> Race. |
| James Valentine, | |
| C. Howard Pixton, winner of the "Manville" Prize. | |
| S. F. Cody, winner of the "Michelin Prizes," Nos. 1 and 2. | |
| C. F. Pollock, in many balloon trips. | |

World's records had, he continued, been created by two officers of His Majesty's Forces, namely, by Capt. E. L. Gerrard, R.M.L.I. (World's Duration Record with passenger, 4 hrs. 13 mins.), and by Lieut. B. H. Barrington-Kennett (World's Distance Record with passenger, 249½ miles). The latter performance still held as a World's Record.

The Chairman then referred to the good work accomplished by British machines, specially mentioning the Cody Biplane in the *Daily Mail* Circuit and Michelin Prizes, the Bristol Biplane in the European Circuit and Manville Prizes, and the successes of the Bristol Monoplane in France, Spain, and Germany. He also referred to the progress made by Messrs. Short Bros., Messrs. Martin and Handasyde, Flanders and Co., the Blackburn Aeroplane Co., Messrs. A. V. Roe and Co., and the Aeronautical Syndicate, Ltd. Successful experiments had been carried out with hydro-aeroplanes at Lake Windermere by Capt. E. W. Wakefield, and a very successful type of hydro-aeroplane had been evolved. With regard to British engines, it was interesting to observe that the "Green" motor had been successful in the "Alexander" £1,000 Motor Competition, and that the "N.E.C." engine had put up an excellent performance in the Gordon-Bennett Aviation Race at Eastchurch in July.

Dealing with the work of the Club, the Chairman referred to the results of the recent conference in Rome, at which the protest of the Royal Aero Club against the Statue of Liberty Award had been sustained, the prize of £2,000 being accordingly awarded to Mr. C. Grahame-White. The Club had recently instituted regulations for certified trials, and it was hoped that the manufacturers and others would take advantage of that new departure. The Competition Rules of the Royal Aero Club governing all competitions held in this country would very shortly be issued to all members. The Club had recently drawn up regulations for

preventing collisions in the Air; he wished to draw special attention to the simplicity of the regulations, which he trusted would be of service to aviators. The financial position of the Club was satisfactory, and there has been a steady increase in membership.

Attention was next drawn by the Chairman to the progress made in aviation during the year, as indicated by the following records:—

Record for Duration, 1910: 8 hrs. 12 mins. 1911: 11 hrs. 1 min.
Record for Height, 1910: 3,100 metres. 1911: 3,900 metres.
Record for Speed, 1910: 109 kiloms. per hour. 1911: 133 kiloms. per hour. Present time: 167.9 kiloms. per hour (*i.e.*, over 104 m.p.h.).

Record for Distance, 1910: 584 kiloms. 1911: 740 kiloms.

During the year 1910, 45 Aviators' Certificates had been issued by the Royal Aero Club, whereas the total number at the end of 1911 had stood at 175, including those of 55 officers in His Majesty's Forces. During the year 1911, 8 Airship Pilots' Certificates had been granted. The club had instituted a special certificate for aviators, the conditions of which were more severe than those of the Federation Certificate, and it was pleasing to note that 4 aviators had already obtained that special certificate. The Army and Navy were now taking a very deep interest in aviation, which was a good augury for the future. He had the pleasure of acknowledging the generosity of a member of the Club who had placed aeroplanes at the disposal of the Admiralty for the instruction of naval officers and who had also lent machines to the Territorial Forces. The Club with its growing membership would shortly have to increase its accommodation, and that was a question which the Committee would carefully consider during the current year.

In concluding his remarks, the Chairman announced that he had decided to retire from the Chairmanship of the Club. It was, however, his desire still to give the Club the very best of his assistance, whenever possible.

Admiral of the Fleet The Rt. Hon. Sir Edward Seymour, P.C., G.C.B., G.C.V.O., O.M., then presented the medals awarded by the Club. The following were the recipients:—Mr. C. Grahame-White, for his victory in the 1910 Gordon-Bennett Aviation Race at New York; Mr. Robert Loraine, for the first flight across the Irish Sea, September 3rd, 1910; M. Pierre Prier, for the first London to Paris flight, April 12th, 1911; Mr. C. F. Pollock, for general merit in ballooning, 1911; Mr. Alec Ogilvie, for obtaining third place in the 1910 Gordon-Bennett Aviation Race, New York; Mr. J. Armstrong Drexel, for World's Height Record (6,595 ft.), Lanark, August, 1910; Mr. James Radley, for speed record (77 m.p.h.), Lanark, August, 1910; Mr. S. F. Cody and Mr. James Valentine, for their performances in the *Daily Mail* Circuit; and Mr. John Dunville, for his Balloon Voyage across the Irish Sea, February, 1910.

A special gold Commemorative Medal was presented to the family of the late Mr. C. S. Grace. This medal was received on behalf of the family by Mr. Percy Grace, the company remaining standing while Admiral Seymour paid a feeling tribute to the great work for aviation accomplished by the late Mr. C. S. Grace.

A hearty vote of thanks was accorded to Admiral Sir Edward Seymour for his kind services in presenting the medals.

The Secretary read the result of the ballot for the nine places on the Committee for the current year as follows:—

Col. J. E. Capper, C.B., R.E., G. B. Cockburn, Capt. J. D. B. Fulton, R.F.A., J. T. C. Moore-Brabazon, Sir Charles D. Rose, Bart, M.P., Commander C. R. Samson, R.N., A. Mortimer Singer, The Marquess of Tullibardine, M.V.O., D.S.O., M.P., and R. W. Wallace, K.C.

A Superior Certificate for U.S. Army Pilots.

FOLLOWING the lead of France, the United States Secretary of War has now arranged to issue a "Superior" certificate to army aviators, and those officers who qualify will be designated "Military Aviators," and placed on a special register with the date of their qualification.

The tests are six in number, as follows:—

"1. Attain an altitude of at least 2,500 ft. recorded by a suitable barograph.

"2. Make a cross-country flight of at least 20 miles (10 miles going and 10 miles returning), at a minimum height of 1,000 ft.

"3. Make a flight of at least 5 minutes' duration with the wind blowing at the rate of at least 15 miles per hour (indicated by an anemometer.

"4. Carry a passenger to a height of at least 500 ft. and on landing come to rest within 150 ft. of a previously designated point, the engine being completely cut off prior to touching the ground. The combined weight of passenger and pilot must be at least 250 lbs.

"5. Execute a *vol plané* from an altitude of at least 500 ft. with the engine completely cut off, and cause the aeroplane to come to rest within 300 ft. of a previously designated point on the ground.

On the proposal of Mr. Stanley Spooner, seconded by Mr. F. Harold Sully, the Hon. President, Vice-President and Council were unanimously re-elected.

Hon. President—His Grace The Duke of Argyll, P.C., K.G., K.T., G.C.M.G., G.C.V.O.; Vice-President—Field-Marshal The Right Hon. Earl Roberts, K.G., K.P., V.C., G.C.B., G.C.S.I., G.C.I.E., O.M.; Council—S.A.I. Prince Roland Bonaparte (President F.A.I.); H.S.H. Prince Blucher von Wahlstatt; His Grace The Duke of Sutherland, K.G.; The Right Hon. The Earl of Crawford and Balcarres, K.T., LL.D., F.R.S.; The Right Hon. The Earl of Hardwicke; The Right Hon. The Earl of Lonsdale; The Right Hon. Lord Howard de Walden; The Right Hon. Lord Kinnaird, F.R.G.S.; The Right Hon. Lord Suffield, P.C., G.C.V.O., K.C.B.; The Right Hon. Lord Montagu of Beaulieu; The Right Hon. Lord Llangattock; Admiral of the Fleet The Right Hon. Sir Edward Seymour, P.C., G.C.B., G.C.V.O., O.M.; Admiral The Hon. Sir Edmund Fremantle, G.C.B., C.M.G.; Count Henry de la Vaulx (Vice-President Aero Club de France); Sir David Salomons, Bart.; Sir Norman Lockyer, K.C.B., F.R.S.; Professor Sir William Crookes, O.M., F.R.S.; Sir Hiram S. Maxim; The Right Rev. Bishop Welldon; Martin Dale.

On the proposal of Col. H. C. L. Holden, seconded by Mr. H. Delacombe, the following rule was unanimously confirmed:—

CONTROL OF COMPETITIONS.

The Royal Aero Club of the United Kingdom has the sole control of all competitions, sporting events, or trials in connection with Aeronautics in the United Kingdom. The exercise of this control shall be vested in the Committee who may for this purpose from time to time make, alter, or amend such rules and regulations as it may think proper. Any person, whether a member of the Club or not, who shall disregard any such rules and regulations, or take part in any competition not authorised by the Club, shall be liable to such penalty of suspension or disqualification as the Committee may think fit to pronounce. The Committee may grant permits for competitions, sporting events, or trials, and may delegate its powers of suspension or disqualification to other Clubs or persons with or without appeal to the Committee. Powers of temporary suspension may be delegated to any steward or judge appointed for any Meeting.

Right of Appeal.—If any person is aggrieved by a sentence of suspension or disqualification under the Competition Rules, he shall have a right of appeal to the stewards of The Royal Aero Club, who shall give an opportunity to the parties of stating their case and tendering evidence. A sentence pronounced by the stewards of The Royal Aero Club shall be final and without appeal (except in the case of International competitions) and shall be binding on all persons for all purposes. The stewards of The Royal Aero Club or the Committee may authorise a statement to be inserted in the official organ of its decisions under this rule.

Election of Stewards.—There shall not be less than six, nor more than twelve stewards of The Royal Aero Club, who shall be elected annually in April by the Committee of The Royal Aero Club. They must be members of The Royal Aero Club, and must not have any direct financial interest in the aircraft trade.

Proceedings.—The stewards of The Royal Aero Club shall appoint their own Chairman and Secretary, and fix their own meetings. The quorum shall be three.

At the conclusion of the proceedings, on the motion of Mr. Robert Loraine, seconded by Mr. E. V. Sassoon, a hearty vote of thanks was accorded to the Chairman for his past services to the Club. The motion was carried with acclamation.

166, Piccadilly.

HAROLD E. PERRIN, Secretary.

"6. Make a military reconnaissance flight of at least 20 miles for the purpose of observing and bringing back information concerning features of the ground or other matter which the candidate is instructed to report upon. This flight must be made at an average altitude of 1,500 ft."

The candidates will also have to pass sight and hearing tests, while should their history show they suffer from indigestion or other disorders likely to produce dizziness, headache, or to impair the vision, they will probably be rejected.

The Otto Aeroplane and Engine are described in the *Deutscher Luftfahrer Zeitschrift*, January 24th. They are designed and manufactured at München by Herr Gustav Otto, the son of the celebrated re-inventor of the Beau de Rochas cycle, on which the majority of modern internal-combustion engines work. The four-cylinder motor develops 60-h.p. though the weight does not exceed 200 lbs. The water circulation is by means of a pump while the lubrication is carried out by a multiple plunger oiler. The crankshaft is three bearing; the valves are side by side. The gudgeon-pin is secured by two set screws, while the piston is fitted with three rings all above the gudgeon-pin.

AIR EDDIES.

HAD a line from Charles Hubert the other day. Apart from giving me the good news that he is getting stronger and stronger every day, he did not have a great deal to say about himself. However, he has promised to send quite a long and interesting letter soon. Let's hope he will come back to England after all, for he is a real good fellow, is Hubert.

A very fine test on the Bristol two-seater monoplane was witnessed at Salisbury Plain on Sunday last, when Pierre Prier, its designer, took out one of these machines and flew a couple of wide circuits in a 35-mile-an-hour wind, virtually a small gale. His handling of the machine was perfect, and as for the stability of the machine—well, he did not hesitate, even in that wind, to bank his turns well and to finish up with a *vol plané*.

Dyott's experience in Mexico should serve as a warning to any exhibition flyer thinking of touring that district. He is now safely back in New York, and how he reached there in one piece, with his machines, makes rather interesting telling. It will be remembered that after the Nassau Boulevard week Dyott and Capt. Hamilton went on to Mexico City to contribute towards the celebrations in honour of the newly-appointed President, Madero. Things went along in quite good style, even the President consenting to taste the joys of flying with Dyott on his Deperdussin. However, trouble was in store for them, as some of the Mexican officers got keen on the idea of taking up a good load of bombs and dropping them upon a collection of revolutionists in camp some distance from the city. Naturally, Dyott and Capt. Hamilton did not quite see the fun of the thing, so they packed up their machines and proceeded to Yucatan, where they had contracted to fly.

Arriving there they looked in vain for an aerodrome, but did not succeed in finding an open space even big enough to swing a cat in without getting tangled. Finally, about 30 miles out of the city, they succeeded in discovering a piece of land big enough to fly from. And then the wind started contributing its little bit to the proceedings. The meet met with little success, and the promoters, realising that they stood a good chance of losing quite a lot of money, demanded from the aviators a return of the money that had already been paid to them under the contract. This they naturally refused to do. Luckily for them they had been wise in sending home their fees as soon as they were paid. Whereupon the promoters retaliated by summoning them for breach of contract on the score that they did not fly—really, how could they?—at the place stipulated in the contract. Both Capt. Hamilton and Dyott were, therefore, forced into accepting the accommodation provided by a couple of mouldy Mexican prison cells.

This turn of events they, for the first few hours, regarded as a huge joke. After the third day much of the novelty of the situation had worn off, and, seeing that it is the custom of the place, they commenced—well to pervert the truth pretty badly, to regain their freedom. By promising to stay and do more flights they were set free, and the first thing they did was to go to Progreso, where their machines were, and pack them ready for transport. Dyott got back to Merida that night and sent off his trunk to New York, keeping back only a few soiled shirts and things to give his rooms an appearance of being still occupied. These preparations were only just completed when he was once more seized for breaking faith and escorted back to his cell for another three days.

It was only by making the colossal lie that he would fly from the roof of the jail that he was liberated. Dodging the motley collection of spies, detectives, and other undesirable persons, that were engaged to keep him in sight, he made his way to the station, and hired a special locomotive to take him down to Progreso, where the machines, already packed, were waiting. Here he made arrangements for a tug to take himself and his machines about 7 miles out to sea at midnight to join the freight-ship "Guantanamo" on her way to New York, and thus at last he managed to get clear of his persecutors. That night as he subsided into his bunk he ruminated on the joys of exhibition flying in those parts of the world where the natives insist on throwing cocoanut shells at your machine, and threaten to burn it if you do not consent to fly in a gale. I believe he has got some sort of presentiment that after all it would not perhaps be good for his health to return to Yucatan.

How appropriate! The ultra stream-line Piggott monoplane will have recovered in time for Easter. It is rather interesting to note that the egg is an ancient pagan symbol for resurrection.

After the signal services that Mr. Roger Wallace, K.C., has rendered the Royal Aero Club as chairman of that body—a capacity that he has held since its inauguration in 1901—he is only justly entitled to a respite from these arduous labours. In their new chairman, Sir Charles D. Rose, M.P., the club has one of mature and practical judgment, and of influence that cannot be but beneficial to them.

I shouldn't be at all surprised to see a biplane emanating from the Flanders works one of these fine days.

"Benny" Hucks tells me that he will be flying at Hendon during the Easter meeting there, most probably on a Gnome-Blériot, a machine that he has not yet tried. It will be funny to see him performing most priceless pirouettes on the Anzani when he starts his novitiate stage on this new mount.

As for the new monoplane he is designing for the War Office competitions, I have seen the general outline drawings and really it should be one of the prettiest and most serviceable machines yet built when it gets to that stage.

I hear that Commander Schwann is going into the question of obtaining a new Avro biplane wherewith to continue his hydro-aeroplane experiments at Barrow. If it does materialise the machine will present several new features, and will be fitted with a 60-h.p. engine. An engine of this power in place of his little 35-h.p. motor, together with the results of his experiments with floats, and of course the virtues of the biplane itself, should result in a very excellent combination.

One of the James Means devices for carrying on communication with an aeroplane in flight—an apparatus that was described in these columns a fortnight since—has arrived at the Avro Brooklands depot, where it will be tried out in the course of a few days. It looks very promising.

Their new monoplane has not yet been able to leave the confines of their Manchester works owing to that most universal of all excuses these days, the coal strike. From sketches Mr. Roe has shown me it will certainly be a very sound little machine, and possessing that most excellent attribute of simplicity. The body of the machine is quite narrow but enormously deep, and shaped to a very excellent stream-line form. A Viale engine is clamped straight on to the front. In order to improve the pilot's range of vision, much of the metal covering of the front of the fuselage has been cut away and mica windows substituted. In plan form it is almost identical with their new biplane described in this issue.

The complimentary banquet given by the Rhyl Ratepayers' and Improvement Association to Vivian Hewitt, as a sign of their recognition of the popularity earned by that town through his excellent flights in the neighbourhood, took place at the Queen's Hotel there on Monday last. By the look of the menu and the length of the toast list, I should estimate that they had a very fine time amongst themselves. At any rate it is good to see public appreciation taking form in some part of England.

Earle Remington, who has been doing some fine flying at Los Angeles lately, paid a flying visit to New York the other day for the purpose of adding to his stable. Since he purchased his old Blériot from James Radley he has had two more Blériots, and his latest purchases are a Wright biplane and a Burgess-Wright hydro-aeroplane.

"OISEAU BLEU."

A THREE DAYS' MEETING AT HENDON.

FOR the Easter holidays, the London Aerodrome Club, of which the Grahame-White Aviation Co. are the proprietors, are arranging a three days' meeting, under the open-competition rules of the Royal Aero Club. They have issued an announcement very much on the lines of those published by the Brooklands Automobile Racing Club in connection with their motor-car race meetings, and we reproduce this practically in full below. It will be noticed that there are three events on Good Friday, and a similar number on Saturday; while for Easter Monday, five separate items have been arranged, apart from the exhibition flying which will take place in the early afternoon. The entries close on April 2nd, and in most cases there must be eight entries and six starters, or the race may be void, or the number and value of prizes reduced. In the passenger event there must be six entries and four starters, and in the relay race six pairs entries and four pairs starters. We are pleased to see that in the supplementary regulations there is a clause to the effect that competitors and their pilots purposely flying over the public enclosures or outside of the regular course, without permission, will be liable to a fine of £10, or may be penalised or disqualified. The full details of the events are as follows:—

Good Friday, April 5th.

2.30 p.m. to 3.30 p.m.—Parade of aeroplanes and exhibition flying by competitors.

3.30 p.m. to 4.30 p.m. London Aerodrome 3 days' Grand Speed Contest.—The entrant of winner to receive 100 sovs., the entrant of second 25 sovs., and the entrant of third 10 sovs.

Open to all types of aeroplanes, to be competed for on April 5th, 6th and 8th, 10 laps daily. The winner to be the entrant of the aeroplane which completes the 30 laps in the fastest time. Flying start. Distance about 45 miles. First 10 laps about 15 miles. Entrance, 2 sovs. p.p.

4.30 p.m. to 5.30 p.m. Fast and Slow Passenger-Carrying Contest.—The entrant of the winner to receive Cup and 10 sovs., and the entrant of the second 5 sovs.

Open to all types of aeroplanes, 4 laps. The first two laps to be flown at fastest speed (flying start). The second 2 laps at slowest speed (standing start). The winner to be the entrant of the aeroplane which shows the greatest difference in speed. Distance about 6 miles. Entrance, 10s. p.p.

5.30 p.m. to 6.15 p.m. Altitude Contest.—The entrant of the winner to receive cup and 10 sovs., and the entrant of the second, 5 sovs.

Open to all types of aeroplanes. The winner to be the entrant of the aeroplane attaining the greatest altitude as recorded by the sealed barograph. Entrance, 10s. p.p.

Saturday, April 6th.

2.30 p.m. to 3.30 p.m.—Parade of aeroplanes and exhibition flying by competitors.

3.30 p.m. to 4.30 p.m. Figure Eight Speed Contest.—The entrant of the winner to receive 20 sovs., and the entrant of second 10 sovs.

Open to all types of aeroplanes. Competitors to start from the get-away, fly once round the main course, cross the starting line, then start the figure-eight course, around pylon No. 2, leaving pylon on his left, then proceed directly to pylon No. 5, leaving that pylon

on his right, back over the starting line to pylon No. 2, repeat figure eight six times, directly after which he will fly once round the main course and land in the get-away. The winner to be the entrant of the aeroplane completing the course in the fastest time. Flying start. Distance about 9 miles. Entrance, 10s. p.p.

4.30 p.m. to 5.30 p.m. London Aerodrome 3 Days' Grand Speed Contest.—2nd day of competition. 2nd 10 laps.

5.30 p.m. to 6.15 p.m. Monoplane Handicap Speed Contest.—The entrant of winner to receive 20 sovs., and the entrant of second 10 sovs.

Open to all types of monoplanes. 8 laps. Distance about 12 miles. Entrance, 10s. p.p.

Easter Monday, April 8th.

12 o'clock noon to 1.30 p.m.—Parade of aeroplanes and exhibition flying by competitors.

1.30 p.m. to 2.30 p.m. Biplane Handicap Speed Contest.—The entrant of the winner to receive 20 sovs., and the entrant of the second 10 sovs.

Open to all types of biplanes. 8 laps. Distance about 12 miles. Entrance, 10s. p.p.

2.30 p.m. to 3.30 p.m. London Aerodrome 3 Days' Grand Speed Contest.—Third day of competition. Final 10 laps.

3.30 p.m. to 4.30 p.m. Cross-Country Handicap (Hendon—St. Albans—Hendon).—The entrant of the winner to receive 50 sovs., and the entrant of the second 20 sovs.

Open to all types of aeroplanes. Competitors' aeroplanes to be on the starting line with engine running and to start on the fall of the starter's flag, to fly round the mark tower at St. Albans, returning and crossing the starting line. The winner to be the entrant of the aeroplane returning and crossing the starting line first, having properly completed the course. Limit aeroplane starts first, and thereafter in rotation according to handicaps. Distance about 22 miles. Entrance, £1 p.p.

4.30 p.m. to 5.30 p.m. Relay Race.—The entrants of the winners to receive 20 sovs., and the entrants of the second 10 sovs.

Open to all types of aeroplanes. 4 laps. To be competed for in pairs, biplane and monoplane. The monoplane of each pair to fly the first 2 laps from a standing start, and to land in the get-away, the pilot of which will run to the judge's enclosure and obtain a dispatch; he will then get into the passenger's seat of the biplane, which shall be ready on the starting-line, engine running—the pilot of which will fly the second 2 laps, and land in the get-away; the dispatch carrier shall then deliver his dispatch at the judge's enclosure. The winner to be the pair completing the course and delivering the dispatch in the fastest time. Distance about 6 miles. Entrance, 10s.

5.30 p.m. to 6.15 p.m. Altitude Passenger Carrying Contest.—The entrant of the winner to receive 25 sovs. Prize kindly presented by the manufacturers of Teofani cigarettes.

Open to all types of aeroplanes. The winner to be the entrant of the aeroplane reaching the greatest altitude as recorded by the sealed barograph. Entrance, 10s. p.p.

Entry forms may be obtained from the Secretary, Grahame-White Aviation Co., Ltd., London Aerodrome, Hendon, N.W., or at 166, Piccadilly, W.



AERONAUTICAL SOCIETY OF GREAT BRITAIN.

OFFICIAL NOTICES AS SUPPLIED BY THE SECRETARY.

Council Meeting.—A meeting of the Council was held on March 20th, when there were present: A. E. Berriman (in the Chair), B. G. Cooper, T. W. K. Clarke, J. H. Ledebor, F. K. McClean, Mervyn O'Gorman, and B. Woodward (Hon. Solicitor).

Election of Members.—The following have been elected members of the Society:—Claude Grahame-White and Brig.-Gen. D. Henderson.

Vice-President.—Mr. E. P. Frost, D.L., J.P., has accepted the Council's invitation to become a Vice-President of the Society.

Research Committee.—The following have been appointed to serve on the Research Committee:—Harris Booth, T. W. K. Clarke, B. G. Cooper, Col. J. D. Fullerton, B. Melvill Jones, Archibald R. Low, Mervyn O'Gorman, and A. P. Thurston.

Publications.—It has been decided that, as a general rule and when possible, a *précis* of the papers about to be read before the Society shall be published in the Press before their delivery, in order to facilitate discussion.

Meetings.—A meeting of the Society will be held at the Royal Society of Arts, John Street, Adelphi, on Monday April 15th, at 8.30 p.m., when Mr. T. W. K. Clarke will read a paper on "Aeroplane Stability, with a description of a new gyroscopic apparatus" (which will be shown in action).

Weekly meetings of an informal nature will be held at the Society's offices, 11, Adam Street, Adelphi, on Mondays, from 5 p.m. Refreshments can be obtained, and the Library and current periodicals will be available for reference as usual.

Owing to the Easter holidays and Mr. Clarke's paper, the next informal meeting will be held on Monday April 22nd, when the subject for discussion will be the "Atmospherical Conditions at Hendon Aerodrome."

Pilcher Memorial Fund.—The Council beg to acknowledge the following subscriptions:—Amount previously acknowledged, £20. 10s.; Major B. Baden-Powell, £1. 1s. This fund is now closed.

FROM THE BRITISH FLYING GROUNDS.

Brighton-Shoreham Aerodrome.

ON Saturday last Mr. England put in some long "straights" on the C.-E. biplane in good form, and on Tuesday again indulged in a good spell of practice. On one occasion he flew up the ground, made a left-hand turn, and came back to the sheds without touching earth. Mr. England is to be congratulated on the progress he is making.

Mr. H. T. Smyth-Newton tried the machine and had her up for several flights. He pronounced her exceedingly comfortable and easily controlled.

Brooklands Aerodrome.

ON Wednesday last week Lieut. Parke made his first circuit on the new military-type Avro. The machine flies "strong," and appears to have plenty of power in reserve. In the afternoon Parke was again out, reaching 1,000 ft. At the Bristol school Merriam was early testing the air, but found it too windy for pupils. Later Fielding put in some rolling practice, and in the afternoon Pizey on the monoplane was flying round at about 150 ft. Kaynham on the Burgess-Wright was out in the morning with the pupils Headley and Young as passengers. In the afternoon Sopwith took up Handasyde as passenger, treating him to "stunts," such as flying down the finishing straight at an altitude of 36 inches, and giving life-like imitation of a switchback railway. Spencer was similarly dealt with. The Deperdussin school was represented by Petre, who having tested the air handed the machine over to Gill. This pupil made a number of good steady flights and quarter turns.

Thursday was a blank day, but on Friday school work was again in progress. At the Bristol School Pizey took up Lieutenant Mackworth, a new pupil, in the morning, but found it too gusty to allow pupils out solo. In the afternoon, Pizey put up the monoplane to test the air, and finding it all right, Mackworth and Major Bannerman received tuition from the passenger's seat of the biplane, while Captain Broke-Smith made some straight solo flights on the same machine and Lane followed suit on his monoplane. Lieutenant Parke, on the Avro, took up Rance-Smith, who has become a pupil. It was rather windy, and in landing Parke broke his propeller and a couple of wheelbase struts, these were soon repaired, however, and he was out again solo for about 15 minutes in the evening. Petre and Sabelli put in circuits on the Deperdussin and Gill some straights on the same machine.

Saturday, March 23rd, was a distinct improvement as a weather sample, and plenty of work was done. At the Bristol School Pizey and Merriam started early, taking Mackworth and Fielding for passenger flights. Capt. Broke-Smith made his first circuit, and then followed up with three figures of eight. Major Bannerman, not to be beaten by his adjutant, proceeded to do the same in excellent style. In the afternoon Pizey was on the monoplane in a puffy wind, the machine handling well. Later Pizey, Fleming, and Merriam were all giving tuition to pupil passengers, and Lane put in some straight flying on the monoplane. Pizey in one of his monoplane flights made an excellent *vol plané* from about 500 ft. without switching on again. In the morning Kaynham climbed to 1,500 ft. on the Wright, coming down in a beautiful spiral *vol plané*. He then took Hedley, Howard Wright, and Young for tuition, the latter taking the pilot's seat for a couple of circuits.

On the military Avro, Parke made a short flight to test the air, and then landed for a passenger. To show proof of her lifting capacity, on which doubts had been cast, he went up again solo climbing 1,000 ft. well under 6 mins. Mr. Partridge volunteering as a passenger, a start was then made, but when about 300 ft. over the river a stoppage occurred in the petrol pipe. Landing without damage this was soon rectified, and a flight of 20 mins. made, during which an altitude of 2,000 ft. was reached in the first 13 mins., the machine disappearing in the clouds some miles beyond Weybridge. Petre on the Deperdussin was flying for about 7 mins.

On Sunday at the Bristol school, Fielding received tuition as passenger, Nesham and Capt. Broke-Smith both did solo circuits, and Garne, an ex-pupil, flew for a few minutes.

Partridge on the Deperdussin was up for about 20 mins., and Parke was flying high on the Avro, also carrying a passenger.

Monday was almost blank, the only flight being a couple of straights on the Green-engine School Avro by Lieut. Parke. New propellers, built by the Bristol Co., have been fitted to the Wright. They are laminated, and of alternate layers of light and dark coloured wood giving a very zebraish appearance. Tuesday morning was puffy, but a little work was put in. The designer of the propellers was taken as passenger on the Wright to test them, but owing to the wind it was difficult to say how much better they were than the original Wrights. Sabelli and Petre were both out on Deperdussin, but found it rather tricky. Parke had out the School

Avro for ten minutes, getting it up about 300 ft., and putting in some figure eights. This machine has only just been repaired after its last visit to the sewage farm. At the Bristol School, Fielding and Capt. Broke-Smith were both doing circuits.

Eastbourne Aerodrome.

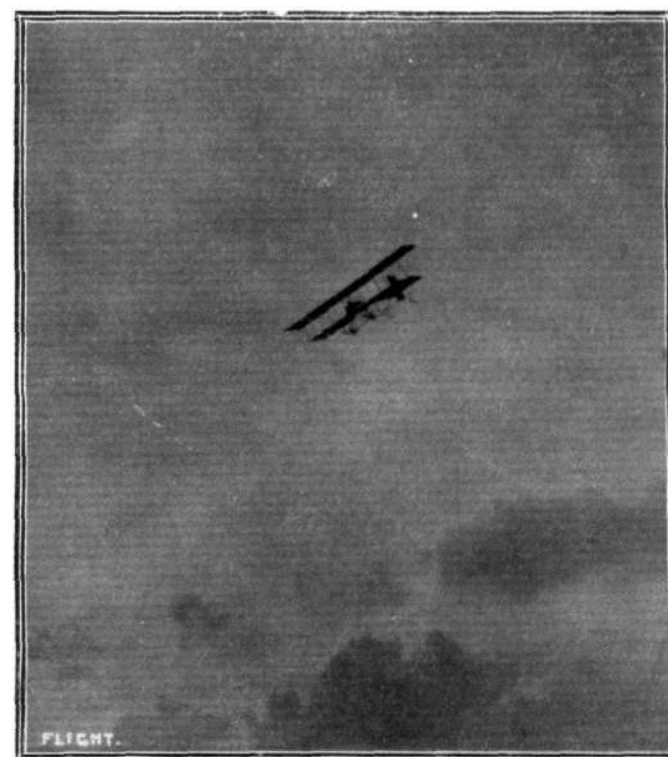
SATURDAY last, Lieut. Lawrence was out early testing the Blackburn after its engine overhaul. He found her much improved and appeared to have no difficulty in keeping the machine up, as was the case before. It was his intention to start for Dover as soon as he had satisfied himself all was right, but unfortunately rain compelled him to again postpone his trip. Towards evening the weather cleared somewhat and Lawrence again had his machine out. He made one successful trip but in landing after a second short flight, he did not straighten out soon enough, with the result that the front skid caught, turning the machine completely over and badly damaging it. Lawrence, unfortunately sprained his arm rather badly and will certainly not be able to fly for another week. Messrs. Lawrence, Fowler and Yates have arranged a friendly match for Easter Monday, in the form of race to Bexhill and back. The Bexhill Council have generously offered a prize of £20 to the winner. The School have recently acquired one of the new Anzani and are fitting it into a Blériot to be used as a Brevet machine. The work of improving the ground is now in progress and several new sheds will shortly be erected.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—Climatic conditions last week were very bad for flying, and no outdoor work was possible until Saturday morning, when, although very foggy, Mr. Fowler had biplane No. 2 brought out, and put in half-an-hour's work at circuits. Mr. Manton was rolling on biplane No. 3. Mr. Lewis Turner, on biplane No. 2, made circuits, followed by Messrs. Fowler and Biard both flying circuits on the same machine. Mr. Turner also, on monoplane No. 4, was making straight flights.

On Sunday, Mr. Grahame-White was testing the ailerons on the new biplane No. 5, which were still, however, too sensitive, and machine consequently returned to works. Mr. Grahame-White then on biplane No. 2 first flew a circuit to test weather conditions, and afterwards put in some exhibition flights, landing with a splendid spiral *vol plané*.

Blériot School.—On Tuesday last week Mr. Tremlett came down to the ground early and was rewarded by being able to practise from 6 a.m. to half past doing straights; then the wind rose and no more school work was possible that day.



Commander Samson, R.N., making a spiral *vol plané* at Eastchurch recently on one of the Short biplanes.

M. Louis Aubert took his first lesson on Wednesday on one of the school machines, and made an excellent start, doing several straight lines along the ground. M. Pothet was also doing well at straight flights at a little altitude, and maintains a very even level. M. Teulade made his debut as a pupil with a very promising start. Mr. Clappen afterwards put in one straight and the wind then rising, school work stopped.

The rest of the week, wind and rain prohibited any work being done outside with the exception of half an hour on Saturday afternoon when the weather being somewhat better, M. Salmel, the School Instructor, took Mr. Allen's 50-h.p. Gnome-Blériot out for a final test prior to delivery to its new owner.

W. H. Ewen School.—Unfortunately the somewhat unfavourable weather of the previous week, although showing some improvement, has continued, so that there have been very few opportunities of getting in much outside practice. Messrs. Apcar, Ware, Lawford, Baumann, Dubois, and Warren and Miss Prentice have been, however, taking the utmost advantage of every possible opportunity. On Saturday, Lieuts. Pennycuik and Kerrich visited the aerodrome and, having decided to join the school, straightaway commenced their course by having their first instruction in the controls. Another new pupil joined the school on Monday, Mr. H. S. Gist, thus making a total of three new pupils in the course of the week-end.

Salisbury Plain.

Air Battalion.—Owing to the unsettled weather there is very little to report for the past week. On Wednesday evening there was a welcome lull which gave an opportunity to Lieut. Barrington-Kennett to have a little scouting practice on his Nieuport, Lieut. Hynes on the Breguet was also out for half an hour while Captain Loraine going up to a height of 2,000 feet was in the air for three quarters of an hour flying across country. Outdoor work was impossible on Thursday and Friday, but on the latter day some interest was aroused by the arrival of Captain Sykes' Vickers-R.E.P. monoplane, the work of erecting which began at once as Captain Sykes hoped to have a try for the Mortimer Singer prize. Captain Fulton's old Blériot with 25-h.p. Anzani engine is also being re-erected and tuned up. Work was confined to the hangars on Saturday as also on Sunday and Monday. On Sunday a 70-h.p. Nieuport monoplane arrived from Hendon and should there be a spell of fine weather, Capt. Loraine will make an attempt on it for the Mortimer Singer prize. On Tuesday the Vickers-R.E.P. monoplane was out for engine testing.

Bristol School.—Rain was falling in torrents all day Monday last week, and, as a result, all work had to be confined to the hangars.

On Tuesday a terrific gale was blowing all the morning, but by the afternoon it had dropped somewhat, when Jullerot ascended with a steady wind of 20 m.p.h. blowing, followed by Hotchkiss, the latter getting into the strongest *remous* he has as yet experienced; however, he managed his machine splendidly, and both pilots made good landings, no further work being attempted.

A wind of 15 m.p.h. was blowing Wednesday morning when Jullerot flew over to Amesbury in order to wake the pupils, afterwards having a race with the car conveying them, the aeroplane and motor car finishing a dead heat at the hangars. Lieut. Hall was then taken by Jullerot for a tuition flight, whilst Gordon England ascended with Mr. Montague Jennings, the latter having just joined the school. The first part of the tests for his *brevet* was passed in fine style by Lieut. Brodigan, who carried out the trials in quite an accomplished manner, Bendall in the meantime ascending with Mr. Montague Jennings as passenger. Prier, on the Bristol monoplane, made an excellent flight, rising after a short run, and attaining an altitude of 1,200 ft., which he maintained, eventually landing by means of a spiral *vol plané*. The wind had considerably increased, and was blowing at well over 20 m.p.h., but Lieut. Brodigan was anxious to undergo the tests for the second part of his certificate, on account of having to return to his regiment. He qualified for his certificate in a very creditable manner, making a plucky flight,



"Royal Flying Corps" and "Royal Aircraft Factory."

COLONEL SEELY, in reply to a question put by Mr. Lee in the House of Commons on Tuesday, said: "The King has been graciously pleased to approve of the newly-constituted aeronautical branch of his Majesty's forces being styled the Royal Flying Corps, and of the wearing by all members of the corps of a distinguishing badge, with the Royal Crown superimposed. Similarly, the Army Aircraft Factory, which will now be available for the whole aeronautical service, will in future be designated the Royal Aircraft Factory."

"His Majesty has granted this privilege in consideration of the specially difficult and arduous nature of the flying service."

"The Army Council have approved of the formation of a standing

Gordon England was out with Mr. Dashwood Lang as passenger, but a heavy fall of rain impeded work for a time. Towards the latter part of the afternoon Prier was up on one of the Bristol mono planes, and Hotchkiss took Mr. Montague Jennings for a trip. Another heavy fall of rain forced the pupils and staff to seek temporary shelter, after which the wind increased considerably. Notwithstanding this, Jullerot was out on one of the Bristol two-seater monoplanes, making a good flight in the strong wind which was blowing, and landing without a jar, which speaks volumes for the stability and strength of the Bristol machine. England was flying with Lang as his passenger, whilst Hotchkiss made a circuit with Mr. Montague Jennings up behind. Wind prevented further work.

The weather Thursday was absolutely hopeless all day, and no attempts were made at any school work.

No work was possible Friday morning either, the conditions being very unfavourable, but in the evening things improved, and Prier set out on one of the Bristol monoplanes, again rising after a short run, and quickly reaching a good height. Gordon England was up on No. 55 with Lieut. Ercole, finishing by means of his usual spiral *vol plané*, for the instruction of the pupil, whilst Commander Schwann flew a wide circuit, and Jullerot started out on one of the Bristol monoplanes for the purpose of testing a new propeller. The machine rose very quickly, and Jullerot was flying till after dark, making a good landing, although it was not possible to see the ground.

After testing the conditions, Jullerot was very busily engaged Saturday morning, making ascents with Lieut. Ercole, Lieut. Hall, Mr. Land, and then with Col. Smeaton. Bendall was also out making a good flight, with Mr. Montague Jennings as passenger, Lieut. Ercole being given a flight by Gordon England, and at the same time Prier was out on one of the Bristol monoplanes with Lieut. Bowers as passenger. Three daring flights were made by Lieut. Antonini on one of the school monoplanes, the pupil making very sharp bankings and landing perfectly in each case. Commander Schwann was up on No. 66 performing in creditable style, and flying for just over three-quarters of an hour, afterwards ascending for another 15 minutes, during which he rose to a height of 1,000 ft., and successfully negotiated his first *vol plané* from a height of 300 ft., the engine being completely cut off. Judging from this, Commander Schwann should find no difficulty in passing for his *brevet*.

Col. Smeaton, who gained his certificate for the biplane at the Bristol school some short time ago, and is now at the school learning the monoplane, made a flight on biplane No. 43, in order to "feel his feet," making a good landing after 15 mins. Altogether a splendid morning's work was done, and it is a pity that the rain brought things to an untimely conclusion. However, towards the evening Lieut. Bowers made a flight on the monoplane, completing a couple of circuits. Jullerot was also in another of the Bristol two-seater monoplanes making good flights, whilst Gordon England was aloft with Mr. Montague Jennings, afterwards flying alone. Mr. Montague Jennings was also given a flight by Hotchkiss on one of the school biplanes, as also was Lieut. Hall, the latter being given temporary charge of the controls. Lieut. Antonini was out for a trip lasting 15 mins., and Lieut. Wyness Stuart for a flight of the same duration.

A terrific gale was blowing in the early part of Sunday morning, which, however, dropped somewhat as the day progressed, the velocity of the wind being about 35 miles per hour. Nothing daunted by the atmospheric conditions, however, Prier had one of the Bristol two-seater monoplanes brought out, and went for a flight. Notwithstanding the strong wind the machine was perfectly stable, and Prier carried out one of the finest flights he has yet made. He completed two circuits, making a graceful landing, and great admiration was expressed by the small crowd that had gathered at the wonderful stability shown by the Bristol monoplane in such an exceedingly strong wind.

On Monday a gale was blowing which rendered all outdoor work impossible.



committee to co-ordinate action in dealing with questions that arise in connection with the corps. The committee will sit under the chairmanship of Brigadier-General D. Henderson."

In Memory of Stringfellow.

ON the initiative of Mr. James Gillingham, a movement has been started to affix to the monument in Chard cemetery which marks the last resting-place of John Stringfellow a bronze wreath and tablet, recording the fact that he was the inventor of the first flying machine carrying its own motive power. It is also proposed to erect a railing round the tomb. The cost will be about £25, and subscriptions may be sent to Mr. Gillingham, at Chard, Somerset.

FOREIGN AVIATION NEWS.

With the Hydro-Aeroplanes at Nice.

THE competition for hydro-aeroplanes organized by the International Sporting Club at Monaco, opened on Sunday last in fine weather, when eight out of the ten entrants took part. Fischer, with a Henry Farman machine, and Paulhan and Robinson, on the Curtiss machines, were the only ones to make all four tests of starting from a calm sea, resting on calm water, resting on broken water and rising from broken water. Fischer scored 9.1 points, as he had two passengers on board, while Paulhan and Robinson, who each flew by themselves, scored 7 points each. Renault, on a Maurice Farman machine, with a passenger, made three tests, as also did Caudron, who flew by himself. The only accident happened to Colliex, who, while carrying two passengers, was suddenly brought down from a height of 100 metres and the machine capsized, but the passengers were able to hang on until picked up. Rugere, on a Voisin Canard, and Benoit, on a Sanchez-Besa, were also out, but did not complete any of the tests. The trials were continued on Monday, when the same tests had to be gone through, with the addition of two more calling for a landing on the shore. Fischer again was most successful, and in four of the tests was accompanied by two passengers and in the others by one passenger. Paulhan made all the events with one passenger, whilst Robinson and Caudron each made all the tests unaccompanied.

Wynmalen for the Gordon-Bennett.

IT is announced that one of the representatives of Holland in the next Gordon-Bennett race will be the Dutchman, Jan Wynmalen. He will pilot a monoplane which is to be built by the Oertz Co. It will be fitted with a 70-h.p. Gnome engine, and designed for a speed of 94 miles an hour.

Protection Against Fire.

EVER on the watch to ensure the security of pilots and their machines, the Deperdussin firm have been experimenting with fire extinguishers, &c., and it is said they have evolved a syringe arrangement which has given excellent results, and which they propose fitting to all their machines.

To Cross the Alps.

HENRI DANCOURT, who has been flying his Viale-engined Blériot at Gap, has announced his intention of making a trip across the Alps, but instead of following the route of the ill-fated Chavez through the Simplon Pass, he will go by the neck of the Geneva mountain.

Michelin Target Prizes.

THE progress of the competition for the Michelin Target Prizes appears to be dogged by misfortune. Several of the dates fixed for the preliminary tests have had to be abandoned owing to the non-materialisation of entries, and on Sunday, when for the first time there were three entries, including Lieuts. Mailfert and Bosquet on Farmans and Gaubert on an Astra biplane, the weather was so bad that it was decided to abandon the attempt. The next trial will take place after Easter.

Rheims to Lamotte Breuil on a Clement-Bayard Monoplane.

ALTHOUGH having to fight his way through wind and rain, Chassagne on Saturday succeeded in making his way back to Lamotte Breuil from Rheims, where he has recently made some splendid flights.

Encouraging Aviation at Compiègne.

AT its last meeting the Municipal Council of Compiègne presented to Legagneux, who is an officer in the Legion of Honour, a cross set in brilliants. The Council also decided to make a donation of 500 francs to the National Fund.

Visits of Inspection by Aeroplane.

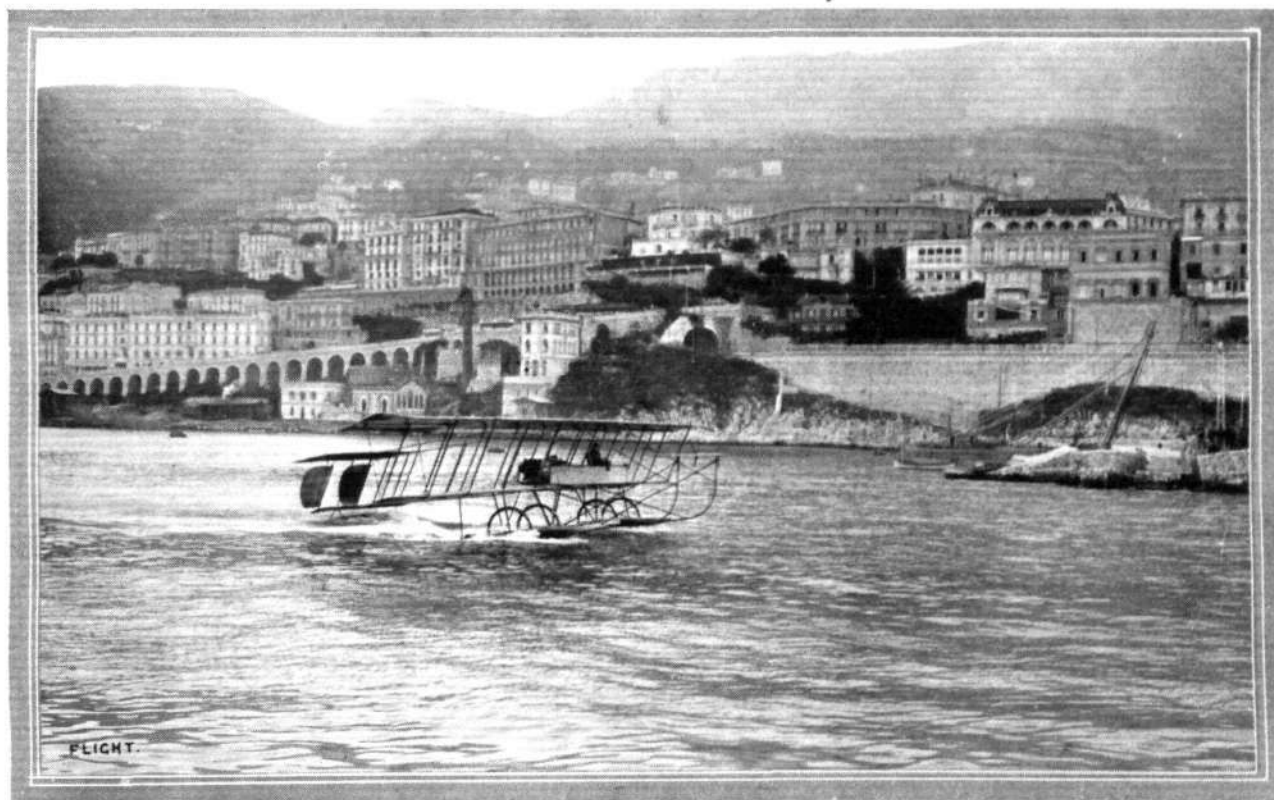
ON the 20th inst., on his M. Farman biplane, Capt. Bares carried Lieut.-Col. Bouttieaux, director of the military airship centre at Chalais-Meudon, from Buc to Villacoublay for a visit of inspection. While at Villacoublay, Lieut.-Col. Bouttieaux was taken for a flight over the surrounding country by Labouret on an Astra biplane. He returned with Capt. Bares to Buc on the following day.

At the Caudron School.

ON the 23rd inst. Guillaux made two fine flights over Le Crotoy and the sea on his Caudron-Anzani biplane, and Jacquemart was flying for an hour on a similar machine with Delacanorgue.

Testing Henry Farman Machines.

ON Monday, a number of Engineer officers, under Capt. Destouches from Rheims, paid a visit to the Farman works at Chalons Camp in order to carry out a number of tests regarding the strength of the various parts of the new demountable Henry Farman military machine. The tests were understood to give complete satisfaction, and with a load of 500 kilogs. of ballast the fuselage exhibited no visible deformation.



THE HYDRO-AEROPLANES AT MONACO.—The Maurice Farman making a trial flight.

A New Passenger Height Record.

ON Tuesday, at Chartres, Frantz, on a Savary biplane, succeeded in bettering Prevost's 2,000 metre height record with two passengers, raising it to 2,125 metres (6,969 feet).

High Flying at Nice.

Poumet on his Borel monoplane on the 23rd inst. started up from the California aerodrome at Nice and flew over the Cimiez mountain, more than 3,000 metres high. This drew a large crowd to the aerodrome, and afterwards he and Laurens on a Deperdussin were kept busy giving passenger flights.

Long Flights at Buc.

PRACTISING at Buc in view of their intention to qualify for superior certificates, Lieuts. Reynaud and Bordage were flying for more than two hours on their Maurice Farman machines on Tuesday last over the environs of Versailles. Meanwhile, Lieut. Vitra, also on a Maurice Farman machine, made his first attempt for the superior certificate.

Competition for Ornithopteres.

M. ADHEMAR DE LA HAULT, who has made an extensive study of the subject of ornithopteres and carried out many experiments, has offered through his paper, the *Acro Mecanique*, a prize of 1,000 francs for ornithopteres. The competition will be divided into two parts—one for ornithopteres themselves, in which prizes of 200 francs and 100 francs and six at 25 francs, will be awarded for the best designs sent in, while the other section of the competition will be for apparatus for testing ornithoptere models, as it is proposed to build models from the best designs sent in and test them.

Volunteer Aviators Return from Tripoli.

IN the orders for the day issued at Derna, on March 14th, the Lieut.-General Commanding, referring to the fact that the volunteer aviators Cagno, Verona, Cobiainchi, Dal Mistro, and Battagli are returning to Italy, their places having now been taken by military aviators, thanks them for the splendid work they have done during the past three months. He says that the magnificent and noble spirit of self-sacrifice which was exhibited by them at all times, and the audacity with which they flew in spite of the tricky winds of the desert, won the admiration of all.

Aviation in Germany.

THE German Aviation Union have secured Duke Ernest Gunther of Schleswig-Holstein, brother-in-law to the Kaiser, as their President. The Prussian Minister of the Interior has

authorised the Union of German Aviators to hold another lottery to assist their funds.

Austrian Army and Aeronautics.

TWO Army officers have recently been sent by the Austrian military authorities to Germany in order to study the latest examples of dirigible construction. On the 19th they visited Frankfurt, and were taken for a cruise in the Zeppelin cruiser "Victoria Louise."

Pilot and Pupil Killed in Russia.

WHILE piloting a biplane at the Sebastopol Military Flying School on March 23rd, Lieutenant Albokrinoff and his assistant were killed as the result of the machine being overturned by a sudden gust of wind and thrown to the ground.

Military Flying in Algeria.

LAST week Sapper Servies made a flight from Ondjda and Naima to El-Aioun-Sidi-Mellonk, and the next day flew on to Taourit, his machine creating no small amount of wonder among the natives.

Aviation Languishing in Canada.

WE are rather surprised to hear that no great amount of interest is being taken in Canada in aviation, and the Aeronautical Society of Canada, whose headquarters are at Toronto, has become practically a defunct institution. We trust, however, that before long some effort will be made to revive interest in the cause.

Parachute Jumping from Aeroplanes.

IN a second jump with his parachute from a Benoist biplane piloted by Antony Jannus at St. Louis on March 11th, Albert Berry had a narrow escape from a fatal accident. On being released the parachute fell below Berry and he was in danger of falling into the apparatus, thereby preventing it opening. Fortunately it righted itself after falling about 150 feet, and the remaining drop of 550 feet was made safely, but afterwards Berry declared he would not repeat the attempt, unless more money was to be made out of it.

A U.S. Naval Expert and Wireless Telephony.

SUCCESSFUL experiments in sending and receiving wireless telephone messages from and to an aeroplane in mid-air are said to have been made by H. E. Morin, chief electrician, U.S. Navy. Instead of using an antennae of wire hanging below the aeroplane, it is said that Morin utilises the wire bracing of the machine. The experiments are being continued.



THE CURTISS HYDRO-AEROPLANE AT NICE.—Our picture shows very clearly the arrangement of the elevator, the main float, and the position of the pilot's seat, engine, &c. This is the machine which, under the direction of Mons. Paulhan, has been flown by Hugh Robinson, and of which the two photographs appeared in a recent issue, showing the machine in connection with the flight when Robinson was pitched into the sea.

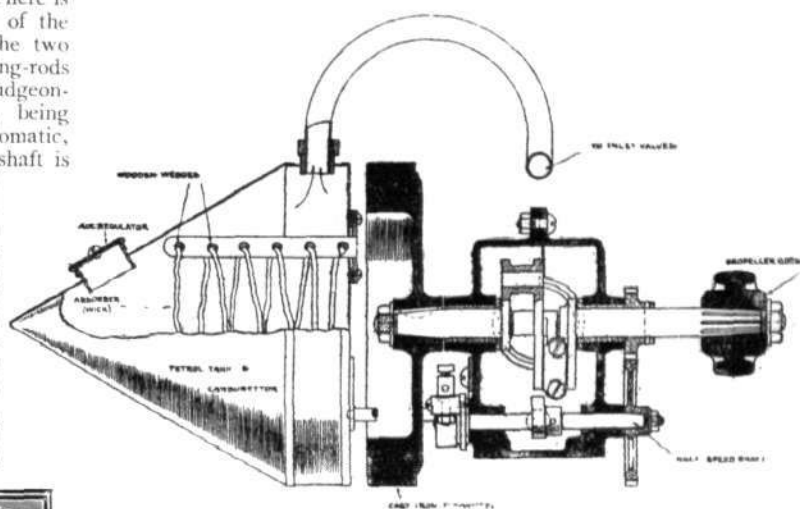
A 1-H.P. PETROL MOTOR FOR MODEL AEROPLANES.

By GEORGE BRENT.

MANY attempts have been made to produce a reliable, yet sufficiently light, small motor for model aeroplanes, but mostly without any degree of success, owing, no doubt, to the trouble of getting small working parts sufficiently light and at the same time reliable. The engine described herewith has been in constant use for several months, that is, it has had several runs every week, sometimes running every night; usually a run lasts about twenty minutes.

As the accompanying drawings and photographs show, the engine is of the four-cycle, horizontal opposed type, having two cast-iron cylinders of $1\frac{1}{4}$ in. bore and $1\frac{3}{8}$ in. stroke. Each cylinder is cast in one piece, and as the engine is air-cooled, they are cast with radiating fins. One h.p. is developed at 1,500 r.p.m. and the total weight of the engine, petrol tank and propeller is $7\frac{1}{2}$ lbs. In preparing the design of these motors, it was decided to follow, as far as possible, the lines of similar full-sized aero motors. The pistons are similar to those used on large aero motors and are fitted with two rings; the crank-shaft is turned out of two-inch special bar steel, and is carried in two phosphor-bronze bearings. There is no special feature about the connecting rods, these being of the standard type, but very strong and light. To enable the two cylinders to be exactly opposite one another, the connecting-rods are off-set in the pistons and are connected to the latter by gudgeon-pins. The aluminium crank-case is extremely simple, being cylindrical and vertically divided. The inlet valves are automatic, the exhaust valves being mechanically operated; the cam-shaft is driven from the main shaft by two-to-one gearing. To assist the exhaust, and also the cooling, small holes are drilled round the cylinder in such a position that when the piston is at the inner end of its stroke, these holes are uncovered, thus permitting the hot exhaust to escape, and so relieve the amount passing through the exhaust valves. The commutator is also driven off the cam-shaft as shown in the drawing. No distributor is fitted to the commutator, as small ones are somewhat troublesome and very light coils are now obtainable at a reasonable price. The petrol tank is made of copper in stream-line form, and is usually fitted to the back of the crank-case, thus reducing the head resistance, but if desired it can be fitted in any other position. The action

of the carburettor can be easily seen from the drawings; it is of the surface type and much simpler, lighter and quite as efficient as the spray type. Specially light and simple sparking-plugs are used that give very little trouble. The propeller is somewhat out of the ordinary having been specially designed for these engines, and patented. They are made entirely of aluminium and have a variable pitch, this being easily obtainable as the blades are graduated so that any desired pitch, within certain limits, may be given at once. They are made in four sizes, namely:—15, 20, 25 and 30 ins. diameter. The results of a series of tests on a 30 in. propeller are shown on the accompanying diagram, and from it the thrust at certain speeds with a certain pitch can be obtained. Taking the engine running at 1,540 r.p.m. with a pitch of 15 ins. the thrust comes out at $9\frac{1}{2}$ lbs., or more than the weight of the motor and accessories. The designer of this engine is a Mr. W. G. Jopson, a member of the Manchester Aero Club. Improvements are still being carried out with this engine, and the designer hopes to reduce the weight by 1 lb. and still have sufficient



Sectional elevation of the 1-h.p. petrol engine for models described by G. Brent. The disposition of the petrol tank and wick carburettor is particularly noteworthy. It will be seen that metal journals are provided for the crank-shaft, which is turned out of 2-in. bar steel.

strength. One of these engines has been run for one hour, and it is proposed to fit one to a quarter scale model Farman, which the designer is constructing. The makers of these motors are Messrs. Cook and Co., Standard Works, Altrincham, Cheshire.

THRUST TESTS WITH 30" DIAM. AERIAL PROPELLER

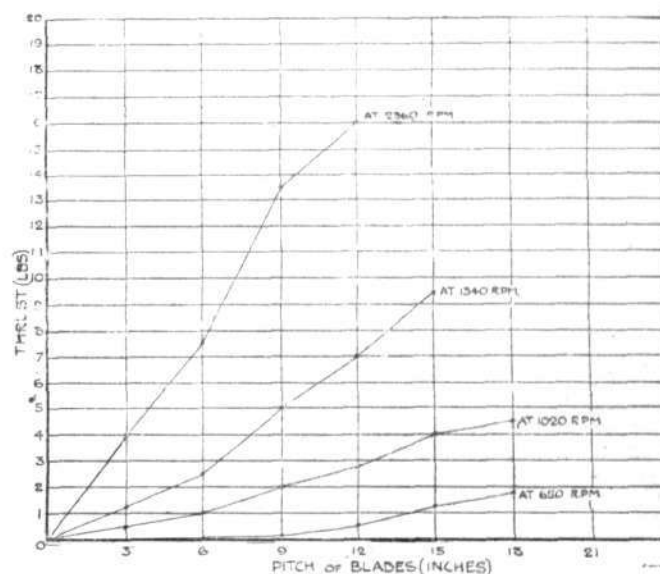
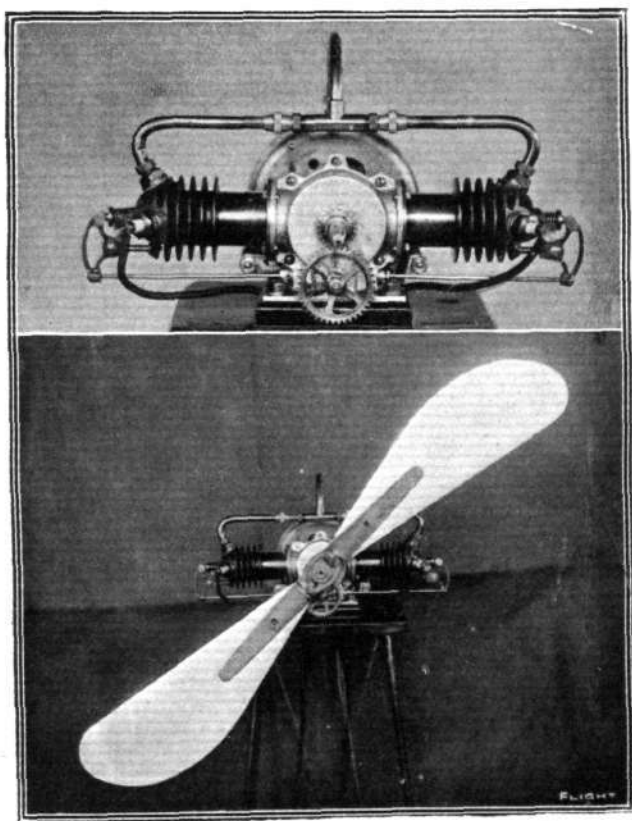
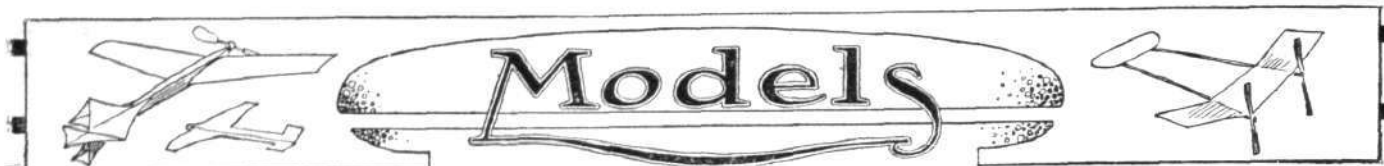


Diagram of results obtained from tests of the 1 h.p. model petrol motor described by G. Brent, showing the thrust in lbs. at varying speeds with propellers of different pitch.



The interesting horizontal-opposed petrol motor for model aeroplanes described by G. Brent. The top photograph shows the half-speed shaft and the arrangement of the valve mechanism. This engine is air cooled, develops 1-h.p. at 1,500 r.p.m., and weighs $7\frac{1}{2}$ lbs., including petrol tank and propeller. The bottom view shows the engine with propeller in situ.



Conducted by V. E. JOHNSON, M.A.

Tractor Screw Models.

The Ideal Monoplane.

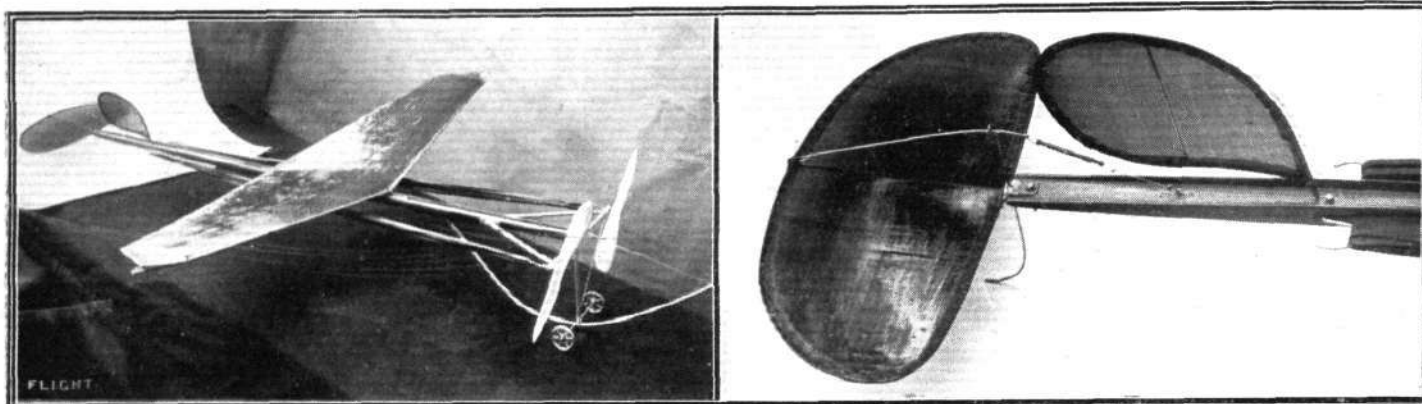
WE have received from the Ideal Monoplane Co., Farnborough, one of their new tractor type monoplanes (*see* illustrations), which we have had the pleasure of testing in actual flight. The model is, we understand, designed by Mr. Rowland Ding, one of whose models took the Royal Aero Club's first prize at the last Aero Show at Olympia. There is no doubt that the design is in many respects an excellent one, being for one thing what one might term especially

flight, which do not appear to have yet been quite successfully solved, we see no reason why the actual flying capabilities of this type should not be made nearly, if not quite equal, to that of the other.

The wind velocity, when the above experiments were made, averaged 15 m.p.h. We hope to be able to make some more flights with the model very shortly.

Mr. C. Ian Burrell's Tractor Model.

The chief dimensions of this model (*see* illustration) were: span 3 ft., length 30 ins., area $1\frac{1}{4}$ sq. ft. (approx.), propeller 9 ins. diam.



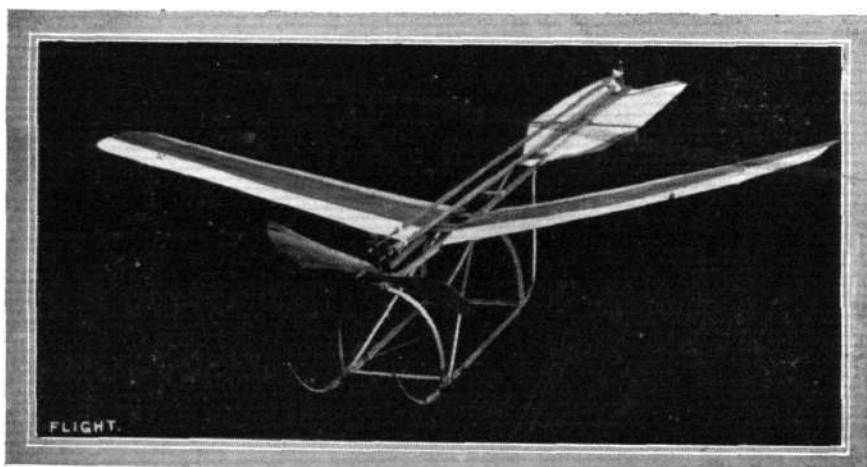
THE IDEAL TWIN-PROPELLER SELF-LAUNCHING MODEL TRACTORPLANE.—On the right the fin tail adjustment is more clearly seen.

"clean" and devoid of all unnecessary and superfluous head resistance. The plan form of the main plane is a vast improvement on the old triangular Ding-Sayers type. The main plane itself is kept taut and given its correct camber by means of two lateral struts sprung into the shape of a bow—a very handy device for quickly setting up or dismantling the plane. The tail, placed (as shown in the illustration) at the rear of the girder-shaped main-spar, admits of a very fine adjustment by means of the screw thread wire strainer.

The total weight of the model when at rest on the ground is borne by the two wheels of the front chassis and the rear wire skid. A considerable portion of the weight is therefore carried by the rear skid, and when the ground is soft—as it was when we tried it—this decidedly impeded the travel of the machine along the ground—the model, however, rose quite successfully after a short run in spite of this. As is well known a much finer degree of adjustment is necessary with respect to the "tail" with this type of model than in the "elevator" or "tail-in-front" type. At the end of the third trial the correct adjustment was, however, found, and several good steady flights were obtained. The stability of the model, while in actual flight, appeared to be in no way inferior to that of the elevator-in-front type; and we certainly experienced none of those peculiarities about which several correspondents have written to us in the case of their own tractors. During one flight one of the propellers caught in the wire of the front skid, with the result that the model landed badly, but without damage.

As we have already stated the model was perfectly steady while in actual flight, whether flying with or against the wind, or even when turning into it. Once the power expended and the propellers stopped, then the model pitched forward to earth, sometimes more, sometimes less, but never in any case was this feature (common to all tractors that we have yet seen) *entirely* absent. We have before expressed an opinion that far more experiments might be made (with considerable profit) with tractor models than is the actual case, and the few experiments which we have been able to make with the above interesting model only go to confirm this view. With the exception of the problem of landing and glide at the end of the

8 ins. pitch, driven by two skeins of ten strands $\frac{1}{16}$ in. sq. rubber, 2 ft. long, geared so as to revolve in opposite directions. As the model was only 2 ft. long and the pitch of the tractor but 8 ins., the flights were very limited, both in distance and duration—the best being in the vicinity of 100 yards. The planes were made from $\frac{1}{16}$ in. whitewood, the front edges being covered with linen to protect them. The tail was non-lifting, underneath which was a vertical fin. The model was very heavy and, as seen from the illustration,



Mr. C. Ian Burrell's tractor model.

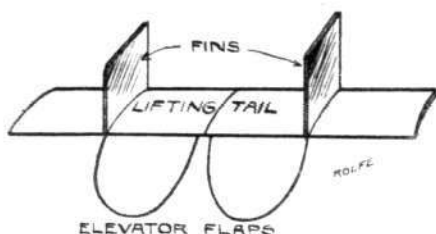
was fitted with a substantial landing chassis; later, when fitted with wheels, it did not rise until it had run 15 to 20 yards. The most interesting fact about this model, probably, is that it was actually constructed and tested more than two years ago, and no lubricant was used on the rubber; combine these facts with the weight and the wooden planes, and the result is one decidedly worth recording.

Fins and Tractors.

Mr. M. L. Rolfe's Experiments.

On my tractor screw monoplane, says Mr. Rolfe, I have tried all kinds of fins in different positions. First I tried no fin at all. The

model rose from the ground well, and after travelling some 30 to 40 ft., it executed an extremely sharp turn and dived. [The reason has already been given, see issue January 27th last.] Next I placed a semi-circular fin below the tail, with the result that the model was decidedly more stable, but tended to rise abruptly and dive. With such a fin so placed I obtained flights of from 60 to 70 yards. I



next tried a more elongated shaped fin (end on) before the tail (just under the main spar), but found this was not so efficient as when placed upright, half above and half below the main spar. I next placed a semi-circular fin above the tail and found the model did not rise so abruptly or dive so steeply, and the length of flight was increased to about 90 yards. Being still dissatisfied, I fitted a lifting tail in place of the non-lifting one hitherto used. Various fins were tried in conjunction with this and the final decision arrived at: that for a model tractor monoplane, the best tail unit is a lifting tail with twin fins on the top (see sketch). With a model so designed I have obtained flights of 120 yards. The model rises easily and flies till the propeller stops, when it glides down at a good angle. With the (rear) elevator (or tail) flaps right down, the model runs along the ground for a considerable distance with the tail high in the air.

In a later communication Mr. Rolfe adds: I have now fitted twin rudders to my tractor screw model, one behind each fin. I have also increased the size of the flaps. It will now fly 200 yards, rising from gravel after a run of 10 to 12 ft. (without push). With the rudders set to turn to the left, the model rises to a considerable height in three or four circles, gliding down in a spiral *vol plané*. It is very difficult to get it to do a good turn to the right—due to the gyroscopic effect of the large single propeller.

W.L.G.

American Model Records.

Mr. L. S. Lathrop (California, U.S.A.), informs us that in 1910 the distance record was 222 ft. and some odd inches. Made by Percy Pierce of New York. Next it was raised to 1,691 ft. 6 ins. [a big jump—looks as if an English built machine found its way across the herring pond] by Cecil Peoli, in Van Cortlandt Park, New York, and afterwards (December 26th, 1911), Percy Pierce succeeded in raising it to 1,814 ft. 6 ins., when flying for the St. Nicholas Model Trophy, offered by the magazine of that name.

The above facts are interesting, but it would be far more

interesting to know what is the American *duration* record. The only test which at present admits of any true comparison being made, owing to that unknown and troublesome factor known as wind velocity.

Further Steam Plant Tests.

Referring to our remarks in last week's issue, that we believed the plant therein illustrated was fully capable of giving sufficient thrust to lift itself vertically in the air, we are now able to corroborate this statement, the plant having since given an actual thrust of 2 lbs., whilst the inclusive weight (fully loaded) is only 1 lb. 14½ ozs. The propeller used was the Chauvière already referred to. We do not lay any particular stress on this achievement *per se*, but we publish it because we have seen it stated, and have also been personally informed, that whilst a petrol motor *is* capable of doing this—a flash boiler plant (at any rate of small size) is not. *Comme toujours*, the proof of the pudding is in the eating. [Since the above was written thrusts of 2 lbs. have been obtained for 45 secs. with both the Centrale and Chauvière propellers, combined with a reduction of 2 ozs. in weight. The engine fairly roars at a 32-oz. thrust and seems to like it.]

Replies in Brief.

A. CURTIS.—You state that your Nieuport model when rolling tends to run to the right in a "big" semi-circle, and that you believe it due to propeller torque, and that until it runs straight it will not rise. This of course depends on how much run you want before rising—if it would rise in comparatively speaking a few feet (since the circle is large) this would not prevent it. Very few models run absolutely straight for long—most circle more or less, but are off the ground before this feature is much or at all in evidence. To overcome propeller torque mount your motor slightly to one side of centre, as shown in the Bragg-Smith model, March 9th issue. The photo sent is not clear enough for reproduction—a photograph must be very clear to reproduce at all well—it is also very small. Send along a larger and clearer photograph and we shall be pleased to publish it.

V. L. ADDISON.—Your communication and sketch are extremely interesting; we note, however, that previous to the attachment of the pendulum device your model appears to have a somewhat unusual high centre of gravity—possibly, rather too high. The pendulum device it would appear corrects this laterally, and also produces a better longitudinal balance, owing to a more correct adjustment of the centre of pressure due to its *weight*. The point being, that we are not prepared to admit, without further experiment, that it is the *pendulum per se* that causes the effects you point out. The point is an interesting one and well worth investigation. The narrowness of the blade probably accounts for the diminished torque effect.

THE KITE AND MODEL AEROPLANE ASSOCIATION.

OFFICIAL NOTICES.

Kite Corps (Foot Section).—The members of this corps will meet at the Plumes Hotel, Park Royal, to-day (Saturday) at 2.30, for instruction under command of Major B. Baden-Powell.

Presentation to Major B. Baden-Powell and Official Taking Over of the Man-Lifting Outfit presented by him to the Corps.—This will take place at the Plumes Hotel, Park Royal, on Saturday, April 20th, when a display will be given by a kite squad, after which tea will be served about 6 p.m., followed by a concert, at which the presentation will be made.

Any member of the association, or friends, wishing to attend should apply to the hon. sec. Full details in next issue.

Members are reminded that the subscription list to the testimonial closes on April 2nd, so they should forward their donation without delay.

The Royal Aero Club's Competition.—So many applications having already been received for details, the rules are appended:—

Hydro-Aeroplane Competition.—For model rising off and alighting

on the water (open to the world). Free to members; members of affiliated club, 1s. 6d.; non-members, entrance fee 3s. Prizes: 1st, £5 5s., presented by the Royal Aero Club, and certificate of the Association; 2nd (£3 3s.) and 3rd (£1 1s.), given by the Association.

Tests.—A. Rising off water; B. Duration of flight; C. Landing on water after a free flight. Maximum marks, 100 (75 for duration, 25 for alighting on water).

Extract from Rules.—Models must not weigh less than ½ lb. All competitors must launch in same direction.

In the event of a competitor's machine not alighting on the water in the course of test A, an additional hand-launched flight will be allowed in test C in each case.

Full rules will be published in programme of the year; date of publication will be announced in these columns.

W. H. AKEHURST, Hon. Sec.

PROGRESS OF FLIGHT ABOUT THE COUNTRY.

NOTE.—Addresses, temporary or permanent, follow in each case the names of the clubs, where communications of our readers can be addressed direct to the Secretary. We would ask Club Secretaries in future to see that the notes regarding their Clubs reach the Editor of FLIGHT, 44, St. Martin's Lane, London, W.C., by first post Tuesday at latest.

MODEL CLUBS.

Aberdeen Aero Club (Sec., A. SEFTON, 387, HOLBURN STREET).

At Saturday's meeting at the Kincorth flying grounds, Mr. J. R. Wilson, president of the club, broke the north of Scotland

model duration record twice in succession with flights of 49 secs. and 53 secs. respectively. The distance of these flights will be measured with a surveyor's chain next week, and it is expected that they will exceed the present official distance record of 1,200 ft.

Birmingham Aero Club (Secs., R. COBHAM, G. H. WOOD, 8, FREDERICK ROAD, EDGBASTON).

GOOD flying last Sunday, with Mr. Trykle conspicuous in the later part of the afternoon. His best flights 88½ secs., 59½ secs., 54½ secs. and 480 yards distance; Mr. Wood, the secretary's best, 49½ secs. and 420 yards distance; Mr. W. Lunn and Mr. Rogers, 47 secs.; Messrs. H. F. McManus, G. Mason and G. Wilde also flying well.

Messrs. Willis Bros. have offered the Club two pairs of propellers for competition amongst members. Particulars from the secretary. Next quarter's subscriptions become due on April 1st.

Blackheath Aero Club (Hon. Sec., A. E. WOOLLARD, 48, HAFTON ROAD, CATFORD, S.E.).

LITTLE flying last week-end owing to the wretched weather conditions.

At Lee Mr. Bailey obtained some remarkable flights with his model; the duration of flight was excellent. Messrs. A. Jarvis and H. H. Pizey were also flying at this ground.

Will members please note that with next Saturday's meeting at Kidbrook, our flying right over this ground will terminate, owing to the farmer requiring the ground for agricultural purposes.

Flying will take place next week-end at Kidbrook, Lee, Blackheath, Grove Park, and Crofton Park.

Brighton and District Model Aero Club (Hon. Sec. A. VON WICHMANN, "KINGSLEIGH," KINGSWAY, HOVE).

BAD weather last Saturday. Discussion in evening. Several new machines awaiting fine day for trial. Mr. Wichmann tuning up ½-h.p. petrol motor for Valkyrie. Mr. Burghope completing big Nieuport type.

Bristol Model Flying (Sec., R. V. TIVY, 3, ROYAL YORK CRESCENT, CLIFTON).

No meeting to-day (Saturday). On Wednesday, April 3rd, informal meeting at Clifton Down Hotel (by permission of Bristol Aero Club) at 8 p.m.

Meeting at Sea Walls on April 6th at 3 p.m. Acknowledgments to firms who have kindly forwarded price lists.

Coventry Aeroplane Building Society (Sec., J. W. SCHOFIELD, 22, KINGSTON ROAD, EARLSDON).

EXHIBITION opens to-day (Saturday) in the Corn Exchange, Smithford Street. Opening by the Mayor of Coventry, supported by Rear-Admiral Bacon and other gentlemen of the city. Scale and other models, including 5 petrol-driven models, 2 Humber engines, parts of full-sized machine, and various other interesting exhibits. Birmingham Aero Club will show a good selection of models.

It is hoped shortly to obtain a larger workshop, and to provide greater facilities for the education of the people in aviation. The society are fortunate in having Mr. W. A. Weaver as president, and also Mr. T. E. Morton, chairman of exhibition committee, who have spent a lot of time arranging the forthcoming exhibition.

On Easter Monday, Birmingham Aero Club meets Coventry Aero Club at Coventry, with a team of flying models, in Green's Field, Allsley Old Road, at 2.30.

Croydon and District Aero Club (158, HIGH STREET).

ON Saturday, the afternoon was ideal flying weather. Mr. C. Smith obtained a flight of 1,155 ft., and durations of from 25 to 33 secs., while the secretary had durations of 31, 37 and 52 secs.

The club competition arranged for Good Friday will be:—Seniors, distance, duration and steering—1st and 2nd prizes, silver cups. Juniors, distance and duration—1st prize, model aeroplane; 2nd, pair propellers and 1 doz. yards elastic.

Ealing and District Aero Club (Sec., B. J. KIRCHNER, 1, QUEEN'S GARDENS, EALING, W.).

THE following team was chosen for the contest with the Paddington Aero Club last Saturday at Parkside, Sudbury:—Messrs. L. Roche, R. S. Hall, C. Davies, C. Chilcott, A. Houlberg, and C. Roche. Mr. A. Houlberg did not turn up, and Mr. R. Hall had the misfortune to smash his model while testing, so that the club was represented by only four. Nevertheless the club managed to pull through, and obtained the victory. The best flights of the team from which the average was taken were as follows:—Mr. L. Roche, 32 secs.; Mr. C. Davies, 36½; Mr. C. Chilcott, 35½; thus making an average of 34½ to Paddington A.C.'s average of 29½ secs. Mr. C. Chilcott had bad luck, his second flight (official) contest ending in a tree after the best flight of the afternoon, and as the flight model was lost sight of by the timekeepers it did not count. Timing was with stop-watches by Mr. Baker and Mr. R. Hall.

At Ealing, G. Beeching got several good flights on Saturday, in spite of the rain.

On Sunday, Mr. L. Roche, with a model, got durations of 31½-30 (2) and 29 secs. L. Kirchner, G. Beeching and B. Kirchner were all flying.

At a general meeting on the 20th, it was decided to consider the question of affiliation to the Kite and Model Aero Association. This, it is hoped, will soon be done, as after showing members benefits to be derived from it, great interest was taken in the subject. The rules for certificates, proposed by Mr. Roche, were passed—1st class, involving severe theoretical examination by examiners appointed by committee, and practical test of 440 yards distance and 60 seconds duration; 2nd class, involving elementary theoretical test by examiners, and practical test of 250 yards distance and 30 seconds duration. In both cases the theoretical test has to be passed before taking the practical test, which has to be observed by two members, one being on committee.

To cover expenses of printing the certificates, &c., the following are fees for certificates:—1st class, 6d.; 2nd class, 3d., payable at each attempt. The 2nd class certificate has to be obtained before the 1st class. The committee insist on a thorough theoretical knowledge as being essential, even before the practical test. Members can obtain conditions for these certificates from the secretary on sending stamp for postage.

A club magazine (monthly) will shortly appear, and members' queries will be answered in it. Drawings of club models will appear in it, and other useful information will also be given. Further particulars shortly. All members are asked to support it, as it is for those members who cannot attend meetings regularly that it is partly intended. Mr. R. S. Hall is the editor.

Flying on Saturday as usual.

Hackney and District Aero Club (Sec., B. H. LONGSTAFFE, 47, JENNER ROAD, STOKE NEWINGTON, N.).

AT meeting at Spensley Hall, Friday last, discussion on aero model question, opened by secretary. Saturday, experiments were carried on long after dark by means of sparklers. Next meeting at Spensley Hall, Friday, April 12th, when private exhibition of models will take place. Members are also asked to specially reserve this date as committee elections are to take place.

Paddington and Districts Aero Club (Sec., W. E. EVANS, 133, BUCHANAN GARDENS, HARLESDEN).

RESULT of inter-club contest: Ealing and District won with an average of 34½ secs. against 29½ secs. Owing to incessant rain, only half the teams competed. Times: C. Davies, 36½ secs.; Chilcott, 35½ secs.; and L. Roche, 32 secs., for Ealing. H. Weston, 38½ secs.; Lane, 26½ secs.; and Chalfont, 24 secs., for Paddington. The home team had the heaviest models. A return contest will take place at Ealing in about three weeks' time. Lane and Weston qualified for duration for second-class certificate.

Committee passed rule that models in competitions shall not weigh less than 4 ozs. Certificate test for models rising off ground to be 30 secs. duration.

To-day (Saturday) juniors' and novices' competitions for duration. Easter arrangements: Saturday, certificate flying; Monday, point-to-point contest.

Reigate, Redhill and District Aero Club (Sec., H. V. MAY, 4, LONDON ROAD, REIGATE).

ON Wednesday, at Earlswood, Osborne succeeded in obtaining several flights of over 200 yards with monoplane. Lewis tuning up new "Almono." Cox, at Nutfield, put up duration of 41 secs., which is club's record. The club are giving a demonstration on Easter Monday at the Southern Counties Band Contest at Whiggle, Redhill. The committee are arranging a series of competitions for the Easter holidays. Flying as usual on Saturday (to-day), at Earlswood.

St. Mary's Model Aero Club (Sec., H. W. A. JOHNSON, THE VICARAGE, KINGSTON, PORTSMOUTH).

HALF-YEARLY meeting April 10th, at 7.30 p.m. Election of officers for next six months, &c.

Salisbury Model Aero Club (Sec., E. M. LEAR, VICTORIA COFFEE ROOMS, BUTCHER ROW).

FLYING on Wednesday last at Wilton Road, Besant obtained flight of 1,029 ft. with a single-stick machine fitted with two 8-inch W.H.C. propellers.

Large assembly of members with machines desired on Easter Monday morning to make impression on those modelists who will be coming in from the surrounding neighbourhood.

Next general meeting at headquarters on April 2nd.

Scottish Ae.S. Model Aero Club (6, McLELLAN STREET, GOVAN).

ON Friday evening last week there was a good attendance of members in the Institute, Elmbank Crescent, when various club matters were talked over. On Saturday Mr. Gordon at Barrhead testing new machine. At Whiteinch Park, Messrs. Langlands were tuning up models, and Mr. Balen testing from the hand the landing

powers of his hydro-aeroplane. Mr. Arthur had several good flights on the pond with his hydro-aeroplane. There will be a meeting of this class of model to-day (Saturday), at the pond in Queen's Park, Crosshill. Proceedings will commence about 3 p.m. Marks will be awarded for best attempts, and will count towards the aggregate prize.

Next competition for ordinary flying at the Aerodrome, Barrhead, on Saturday, April 20th. Events: distance and duration.

Stony Stratford and District Kite and Model Aero Club (Hon. Sec., O. HAMILTON, JUN., OLD STRATFORD).

PREVIOUS to meeting on 14th, Matson was testing his one-ouncer, which passed over the garage buildings, landing at the cross-roads, flights averaging 100-120 yards, and machine climbing well over the telegraph wires, and O. Hamilton, jun., testing a Dollittle tractor type. During the current week O. Hamilton, jun., has been testing two Mann machines belonging to Mr. Field. Elmes' new machine, 1-1-P-o type, is making good show, best flight up to the present, 130 yards, is very fast; bench test of propeller gives 1,500 revs. per min., and propeller show no deformation owing to the propeller not cavitating.

Mr. Matson, flying at Leighton Buzzard, his home, has been getting flights of 25, 23, and 21 secs. duration.

The majority of the Kite Section are building or considering machines.

Opening date of summer competitions April 6th (weather permitting), and any members of other clubs in the district will be permitted to grounds on showing their club cards.

Worcester Model Aero Club (Sec., S. A. SEARS, VICTORIA INSTITUTE, WORCESTER).

RAIN prevented much flying last Saturday, only three models turning out.

A special competition is being arranged for Easter Monday, when prizes will be given for efficiency, distance and duration.

During the month of April it is proposed to hold flying meetings on Thursday evenings in addition to the Saturday meetings. If successful this arrangement will be continued throughout the summer. The first Thursday night meeting, April 4th, at 6.30.

Next flying meeting, Saturday 30th, on Pitchcroft, at 3 o'clock.

Yorkshire Ae.C. (Model Section) (5A, HULLAND ST., LEEDS).

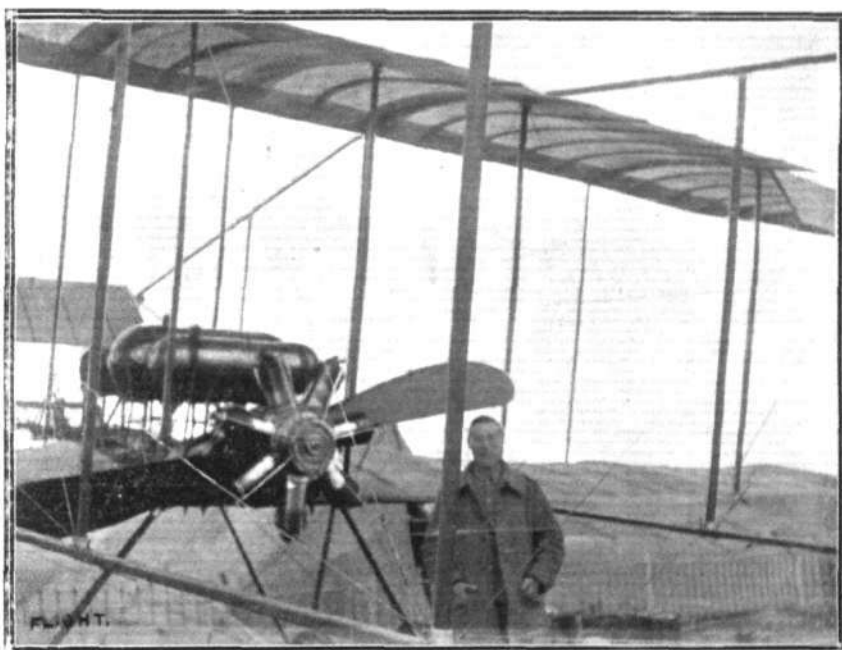
MEMBERS please note. Flying meeting on Woodhouse Moor, to-day (Saturday), at 3 o'clock.

AVIATION IN INDIA.

FROM Mr. Edwin Struckett, B Coy. 2nd North Staffs., Peshawur, comes an interesting note and photograph of Lieut. Harford's flying in India. With the assistance of Major Benwell, who also learnt to fly a Bristol some time ago, and his mechanic, Lieut. Harford put the machine together in his spare time at the Artillery Camp at Kotri, near Hyderabad, and made several cross-country flights accompanied by a fellow officer, who made notes of the country flown over. Mr. Struckett writes:

"I herewith enclose you a photograph of the aeroplane Lieut. H. H. Harford of the 94th Battery, R.F.A., has been flying at Peshawur. He has made some splendid flights here, also taking up passengers. It is the first time the natives had seen an aeroplane in the Punjab, and he has caused no little sensation on the frontier, natives having come miles on foot to see him fly. They call him the 'Bird God.' But I regret to state that while he was flying from Peshawur to Jalozai to take part in manoeuvres, the motor mis-fired and in making a *vol plané* he caught some trees which threw him heavily to the ground, breaking his left leg. He was picked up unconscious and conveyed to Peshawur hospital by motor car, where he underwent an operation and he is now progressing favourably.

"The photo was taken the morning of the accident by myself, and Lieut. Harford's mechanic is standing by the Bristol machine."



Lieut. H. H. Harford's Bristol biplane at Peshawur, in India. Lieut. Harford's mechanic is standing by the machine.

CORRESPONDENCE

* * The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

Correspondents communicating with regard to letters which have appeared in **FLIGHT**, would much facilitate ready reference by quoting the number of each letter.

Soaring Kites.

[1518] For some months past I have been experimenting with kites of different designs. Yesterday while flying a large box-kite with Brookite wings, with 600 ft. of string out, the string broke. I ran after it (the wind was blowing very strongly) for a quarter of a mile, and had nearly caught it, when instead of coming down it rose higher. I watched it sail away, perfectly level, at a height of about 450 ft. to 500 ft. for a mile and a half, and finally it was lost to view. This seems to me remarkable, as when with a smaller one of the same pattern on string breaking it came down very steeply, turning over and over the meanwhile. Perhaps some of the readers of your valuable paper, which I take in every week, could explain why it did not descend.

I was flying it on Roundway Down, and it went in the direction Swindon. It was 4 ft. long and 4 ft. 6 ins. from tip to tip of the wings, colours grey, red, and blue, and in case any of your readers should recover it I should be pleased if they would communicate with me.

Little Writtox, Devizes.

T. E. BATT.

British Breguet Pilots.

[1519] With reference to your note in last week's edition of **FLIGHT**, pointing out that Mr. de Havilland was the first Englishman to fly a Breguet in this country and not myself, this is so, and I was quite aware of it.

What your Salisbury Plain correspondent has got hold of was the fact that I was the first Englishman to pilot a Breguet at all, at least so I was informed by the Breguet firm, and I believe is the case.

I was sent to France to learn the Breguet at the works and school of the Breguet firm at Douai, and returned after completing a course of instruction in the machine and the piloting of it some time before the Government machine flown at Farnborough by Mr. de Havilland was delivered in England.

From this explanation you will see how a distinction which I never laid claim to came to be incorrectly credited to me.

Apologising for troubling you at such length.

Salisbury.

G. B. HYNES.

Engine-in-Front.

[1520] With reference to Mr. Gilpatric's letter, 1515, on this question. Mr. A. V. Roe's biplane, patented in 1906, showed a square stream-line body and the engine in front of the aviator; but

in this case the elevator was in front of the main-plane. This machine (somewhat modified) showed its flying qualities at the end of 1907, when towed with a heavy motor cycle engine and Mr. A. V. Roe aboard. Once off the ground it could be towed with one finger, and on letting the line go the machine glided perfectly. In June, 1908, it made a first short flight, the first in England, driven by a 24-h.p. Antoinette engine. However, in his next machine—which was a triplane—he kept the square stream-line body and the positions of aviator and engine, but the tail was behind, and the main-planes were under complete control, that is, they could be warped or used as elevators. The first machine of this type was built in 1908 for a 35-h.p. engine, but owing to the non-delivery of the motor nothing further was done with it. Afterwards a small machine with a triangular body, for a 9-h.p. Jap engine was constructed. This made its first flight in June, 1909. Goupy III biplane made its first flight 14th December, 1909. I have no information as to any flights made by Goupy II, but believe it was given up as it was rather a heavy machine with only a 25-h.p. engine.

H. V. ROE.

Longitudinal Stability.

[1521] I was, I fear, not sufficiently explicit in my letter 1496 as to why I took $\theta = 0$ in the formula for finding the value of S_1/S_2 when l/x is a minimum. My reason was that the normal attitude of an aeroplane in flight is usually taken to be tangential to its path, and if "stiffness," using the naval analogy, be desired, we want the displacement of the c.p. to be a maximum per degree of tilt in that position, that is, with $\theta = 0$. The problem Mr. Atkinson contemplates seems to correspond rather to that of a vessel sailing heeled over by wind on the side than to one concerning aeroplanes; to my mind, adhering as I do to avoiding inferences as to stability other than statical, while equations incapable of dealing with the dynamical questions of oscillations are concerned.

Either Mr. Atkinson, or the demon above referred to, makes a mistake in quoting as the examples I took $\sin \alpha = \frac{1}{10}$, $\sin \beta = \frac{1}{8}$, for, on looking at my letter, 1496, I find I rightly took $\sin \alpha = \frac{1}{10}$, $\sin \beta = \frac{1}{8}$, the difference being important, because $\sin \alpha$ belongs to the leading plane, and its angle of attack must be the larger of the two, otherwise the c.p. would move the wrong way, rendering the machine inherently unstable, so that, as 1510 stands, the calculations appear to apply to an inherently unstable machine. With regard to the radius of gyrations of the mass of the aeroplane, it comes into account, of course, as Mr. Atkinson says, but in referring to the naval analogy, I was thinking of the effect of form of cross-section of a ship, not of distribution of weight of hull and cargo, in influencing rolling. The moment of inertia enters into account, be it observed, because the question of stability essentially involves the effects of inertia and damping, which unavoidably entail heavier mathematics than statical questions do. Inferences from the conclusions of statical, applied to dynamical mechanics, are liable to turn out just as unpractical as was the endeavour to force signals in rapid succession through the Atlantic cable of 1858 by high battery power, which ruined the cable within a month.

Monkstown, co. Dublin.

MAURICE F. FITZGERALD.

AIRSHIP NEWS.

"Capitaine Ferber" Visits Issy.

WITH six persons on board, the Zodiac military dirigible "Capitaine Ferber" cruised over from St. Cyr to Issy on the 20th. It also visited Issy on the following day, and made some trips there for instructional purposes.

Two more Dirigibles for Germany.

IT is reported from Berlin that the German War Office has ordered two more dirigibles to be delivered in May. One is a Zeppelin, 140 metres in length, and the other a Parseval, the envelope of which will be 80 metres long and 14 metres in diameter.

A Mishap with "Parseval III."

WHILE landing after manoeuvring over the targets at Tegel, the "Parseval III" was caught by a gust of wind and four soldiers who were holding the ropes, were carried into the air. One of them fell from a height of 8 metres and was seriously hurt. It was only after a great deal of trouble that Captain von Jena succeeded in bringing the airship to anchor.

With the Dirigibles at Tripoli.

IT appears that the first tests with the airships at Tripoli were made on March 10th, when "P 2" and "P 3" cruised in company for about two hours and a half, and dropped some thirty bombs. The success of their bomb-dropping exploits is not at all sure, as, although the Italians claimed that they did great damage, an English correspondent with the Turkish Army says there was no panic, while the few fatalities seemed to have occurred to non-combatants.

"FLIGHT" ART PAPER EDITION.

IN response to numerous requests, the publishers of FLIGHT have arranged to print a limited number of copies each week upon art paper, thereby enabling the high quality of the illustrations and matter to be fully appreciated. These can only be supplied by subscription, the annual charge, post free, being: United Kingdom, 15s.; Abroad, 20s. Present subscribers can secure these copies by paying the difference *pro rata* of their unexpired subscriptions. Application should be made to the PUBLISHER, 44, ST. MARTIN'S LANE, W.C.

PUBLICATION RECEIVED.

Catalogue.

Blériot-Type Monoplanes. The American Aeroplane Supply House, Hempstead, New York, U.S.A.



NEW COMPANIES REGISTERED.

Perfecto Aero Propellers Co., Ltd., Salisbury House, London Wall, E.C.—Capital £3,000, in £1 shares.

Scottish Aviation Co., Ltd., 65, Bath Street, Glasgow.—Capital £10,000, in 5s. shares. Formed to manufacture, buy, sell, and repair aeroplanes, airships, aerobuses, &c., and to carry on training and teaching schools and aerodromes.



Aeronautical Patents Published.

Applied for in 1911.

Published March 28th, 1912.

- 5,180. P. JOSEPH. Aeroplanes.
6,520. J. LEGRAND. Aeroplanes carrying fire-arms.
12,375. J. F. BENTON. Spring system for supporting flying-machines.
12,805. J. F. BENTON. Collapsible spring skids.

EASTER HOLIDAYS.

IN consequence of the holidays FLIGHT will be published on Thursday next week. All matter, editorial and advertisement, must therefore be received not later than first post Tuesday.

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FLIGHT.

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